1981-82

Ontario Council on University Affairs

Eighth Annual Report

Ontario Council on University Affairs

Eighth Annual Report March 1, 1981 to February 28, 1982

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Letter of Transmittal

Ontario

**Ontario
Council on
University
Affairs**

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7th Floor
700 Bay Street
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February 28th, 1982

The Honourable Bette Stephenson, M.D.,
Minister of Education/Colleges and
Universities
22nd Floor, Mowat Block,
Queen's Park,
Toronto, Ontario.

Dear Dr. Stephenson,

I respectfully submit the Eighth Annual Report of the Ontario Council on University Affairs, which covers the period from March 1st, 1981 to February 28th, 1982.

Since the transmission of this report marks the end of my term, I wish to thank you, your predecessor and the officials of your Ministry for the assistance provided and the courtesy shown to me during my five years as Chairman.

Also, I would like to express my appreciation to all those members of the University Community who helped me, almost on a daily basis, by providing data and advice in response to our many requests.

Finally, it has been a great privilege to serve with the members and staff of Council. Their support and friendship never failed during both the good and the difficult periods.

Yours sincerely,

W. C. Winegard
Chairman

Members and Officers of the Ontario Council on University Affairs 1981-82

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Introduction

Introduction

The Eighth Annual Report of the Ontario Council on University Affairs covers the period March 1st, 1981 to February 28th, 1982 and contains the full text of all Advisory Memoranda issued during the year. In addition, the present report contains the text of a paper released by Council in January 1982: "A Financial Analysis of the Ontario University System - 1981". As usual, the report also contains a list of the public meetings of Council for the year and the response of Government to the recommendations made by Council.

A Financial Analysis of the Ontario University System - 1981

This paper updates and modifies some of the financial indicators found in Council's previous financial papers, which examined the degree of underfunding experienced by Ontario universities and its impact upon the system.

Since Council's funding advice was last accepted by Government in 1977-78, the universities have received annual operating grant increases of 5.8%, 5.1%, 7.2% and 10.1%. Other areas of Government expenditures have also received small funding increases in recent years. In a period of financial austerity, when the Government is attempting to control its expenditures in order to balance its budget, the constraints accompanying this policy might be expected to affect all Government functions and services. However, over the period in which Council's funding advice has not been accepted, the universities experienced funding rate increases consistently below that of overall Government budgetary expenditures. In fact, over these four years, annual university operating grant increases averaged 2.6% below the annual increases in Government budgetary expenditures (excluding debt servicing) which for the four years were 6.7%, 9.9%, 9.4% and 12.5%. At the same time, while the universities have received a declining share of Government expenditures, it appears that Government's expectations of the university system have not diminished.

Neither the increases in university funding nor Government expenditures generally have kept pace with inflation over the period 1978-79 to 1981-82. When deflated by the Consumer Price Index, university operating grants will have declined in real terms by 12% to 13% by the end of this four year period, while Government budgetary expenditures will have declined by 4% to 5%.

This paper begins by comparing, in Sections A and B respectively, the Ontario university system's Government support and total revenue with that found in other provincial university systems and in the Ontario elementary and secondary school system. Data presented in these sections indicate that the Government funding and revenue positions of Ontario universities compare unfavourably with these other sectors of activity. The next section (Section C) points out that fluctuations in total enrolment, along with shifts in enrolment among disciplines, have made it difficult for Ontario universities to adjust to financial constraints.

The paper then goes on to examine the impact of these financial constraints on key components of expenditure in Ontario universities. Specifically, Section D examines the impact on faculty and staff resources and Sections E and F outline the effects on equipment, furniture expenditures and library acquisitions. These sections point out respectively that faculty and staff salaries have not kept pace with salaries in certain sectors of the economy and that expenditures on equipment, furniture and library acquisitions have declined substantially in real terms in recent years.

Section G indicates that provincial funding constraints on capital assistance have been even more restrictive than those for operating grants. Comparisons of the present allocative formula and hypothetical alternatives are presented in Section H. The effects on each institution of using a completely enrolment sensitive allocative formula, or moving to the other extreme - an enrolment insensitive formula, are examined. Finally, Section I provides a few comments on research funding, noting that there are some encouraging signs in this area.

(A) Interprovincial Comparisons

In recent years, restraint in the growth of Government expenditures and in university funding have not been confined to Ontario. Restraint has been the declared policy of all provincial governments at one time or another during the past few years. Despite this apparent uniformity in declared fiscal policy, the application varies considerably, particularly with respect to university funding. As pointed out in *System on the Brink* (September 1979) and in *A Financial Analysis of the Ontario University System - 1980* (September, 1980) the funding constraints faced by Ontario universities have been more stringent than those faced by universities in most other Canadian provinces. Revised and updated data confirm this observation.[1]

Table 1 of the Appendix provides some indication of the stringency in Government funding experienced by Ontario universities. The table presents the provincial operating grants per full-time equivalent (FTE) student for each province in Canada, along with the weighted average of the nine provinces excluding Ontario, for the period 1974-75 to 1979-80. Ontario declined in rank over this period from seventh to ninth, with only Nova Scotia being lower at the end of the period. Ontario's position, relative to other regions in Canada (Western provinces, Quebec and Atlantic provinces) and to the weighted average of the other nine provinces, is illustrated graphically in Figure 1. The figure indicates that, relative to the other provinces, Ontario's Government support, as measured in terms of operating grants per FTE student, was low at the beginning of the period examined and declined further in subsequent years.

The Ontario university system's comparatively low level of Government support has had a direct influence on the level of operating income in Ontario universities. Table 2 of the Appendix presents the total operating income per FTE student for each province over the same period, 1974-75 to 1979-80. It indicates that, over this period, Ontario dropped from sixth to ninth place among all provinces in total operating income per FTE student. As Figure 2 indicates, at the end of the period examined, in terms of operating income per FTE student, Ontario universities were behind Quebec, the Western provinces, the Atlantic provinces and the weighted average of all provinces excluding Ontario.

More recent information suggests that, since 1979-80, the financial position of Ontario universities, relative to universities located in other provinces, has declined further. Table 3 of the Appendix documents the changes in Government grants, fees and enrolment for each province for 1980-81 and estimated for 1981-82. Over this two-year period, Ontario's grant increases are among the smallest percentage increases made available.

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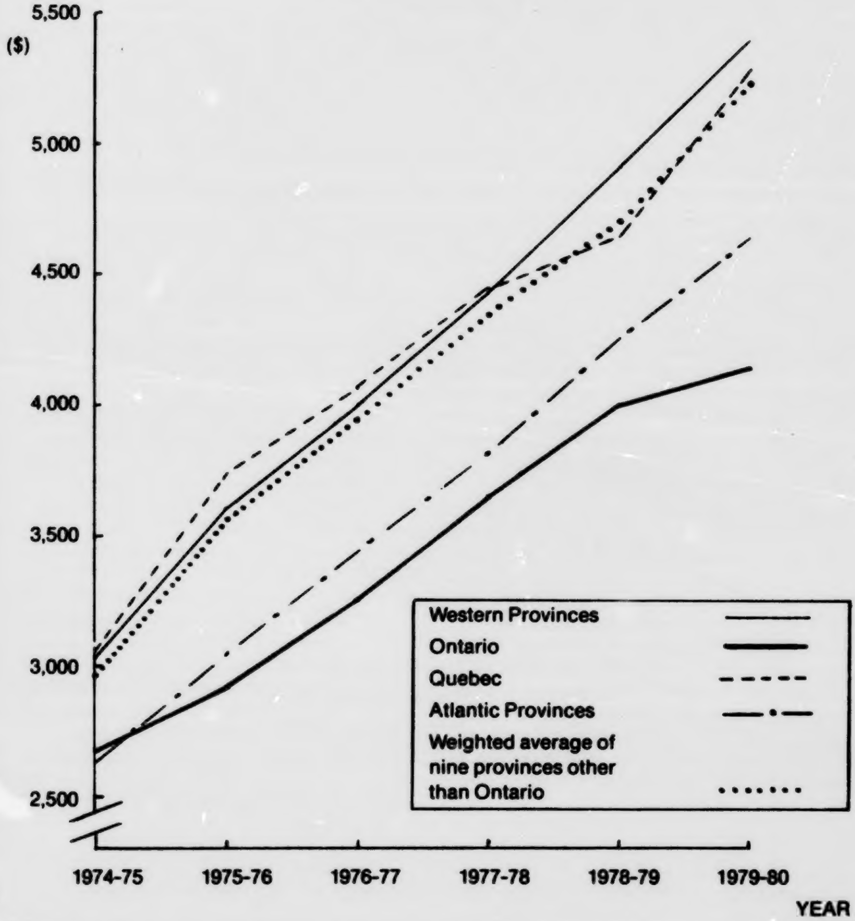
(1) As has been the case in its previous financial papers, Council is again relying upon the Tripartite Committee on Interprovincial Comparisons for its data. The Committee's data base has been revised since last year, making it more accurate and the data more comparable among provinces. As a result, however, the data presented do not correspond precisely to those presented in previous years.

Figure 1

Interprovincial Comparison of University Grants: Provincial Operating Grants per FTE Student, 1974-75 to 1979-80

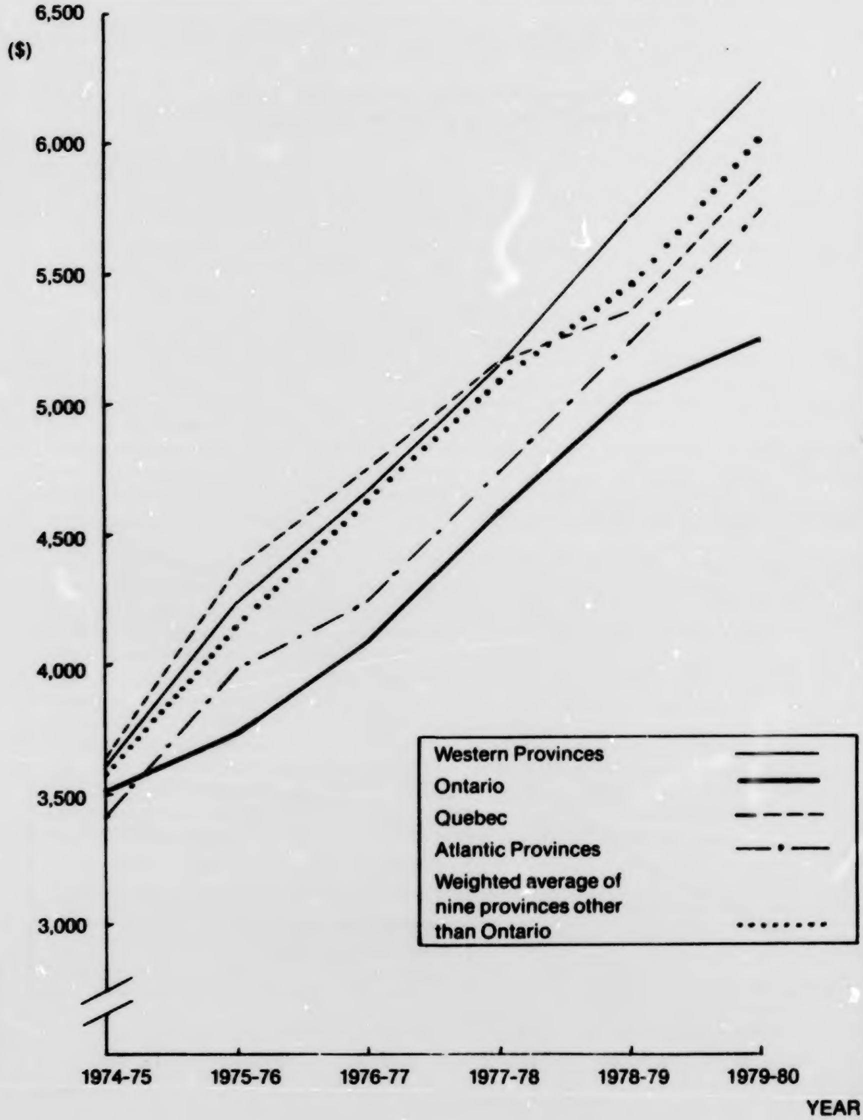


Note: In order for Ontario universities to have been funded at the same level of operating grants per FTE student as the weighted average of the other nine provinces in Canada in 1979-80, the Government of Ontario would have had to increase its operating grants by over $197 million in that year alone.

Source: Table 1 of Appendix.

Figure 2

Interprovincial Comparison of University Revenue: Total Operating Income per FTE Student, 1974-75 to 1979-80



Note: In order for Ontario universities to have received the same level of operating income per FTE student as the weighted average of the other nine provinces in Canada in 1979-80, the operating income of Ontario universities would have had to be over $136 million higher in that year alone.

Source: Table 2 of Appendix.

(B) Intraprovincial Comparisons

The present analysis updates that undertaken in a *A Financial Analysis of the Ontario University System - 1980,* which found that the level of provincial funding per student in Ontario elementary and secondary schools increased substantially in real terms between 1970-71 and 1979-80, while university funding per student declined during the same period. Table 4 of the Appendix, and Figure 3, present indexes of provincial grants per student for universities and for elementary and secondary schools, measured in constant 1970-71 dollars, over the period 1970-71 to 1980-81. The table shows that in 1980-81, university funding per student continued to decline, while elementary and secondary school funding continued to increase. Over the period, 1970-71 to 1980-81, university operating grants per FTE student declined in real terms by 16.8%, while provincial support per elementary and secondary school pupil increased 50.1% when the provincial contribution to the Teachers' Superannuation Fund[2] is included in provincial support and by 44.9% when this contribution is excluded.

University revenues per student have also declined in real terms since 1970-71, while elementary and secondary school revenues per student have increased. Table 5 of the Appendix, and Figure 4, present indexes of comparable university and elementary and secondary school revenues for the period 1970-71 to 1980-81. The university index uses provincial grants plus tuition fees as a proxy for university revenue, measuring, in constant 1970-71 dollars, the revenues per FTE student received by Ontario universities over this period. The index of elementary and secondary school revenues uses provincial grants plus local tax revenues as a proxy for total revenue. This index measures in real terms provincial grants plus local tax revenues per pupil received by Ontario elementary and secondary schools over the same period. According to these indexes, school revenue per pupil rose 40.4% in real terms between 1970-71 and 1980-81 when the provincial contribution to the Teachers' Superannuation Fund is included and by 37.3% when this contribution is excluded. This compares with a 18.2% decline in university revenue per student during the same period. These trends show no signs of changing. University system revenues per FTE student declined in real terms by 6.3% in 1980-81 over the previous year, while elementary and secondary school revenue per pupil increased by 1.7%.

It would be desirable to include comparable indexes of provincial support per FTE student and revenue per FTE student for the other major education sector in the province, the Colleges of Applied Arts and Technology (CAATs). However, it is not yet possible to compile what Council believes to be the most appropriate comparison data, operating grants allocated to post-secondary programs per FTE post-secondary student or operating revenue accruing to post-secondary programs per post-secondary student in the Colleges of Applied Arts and Technology. Information available on total revenue and Government support for all CAAT programs, including non-post-secondary, adult training and training in business and industry, suggests that on a per FTE student basis the CAATs have not fared well either in recent years.

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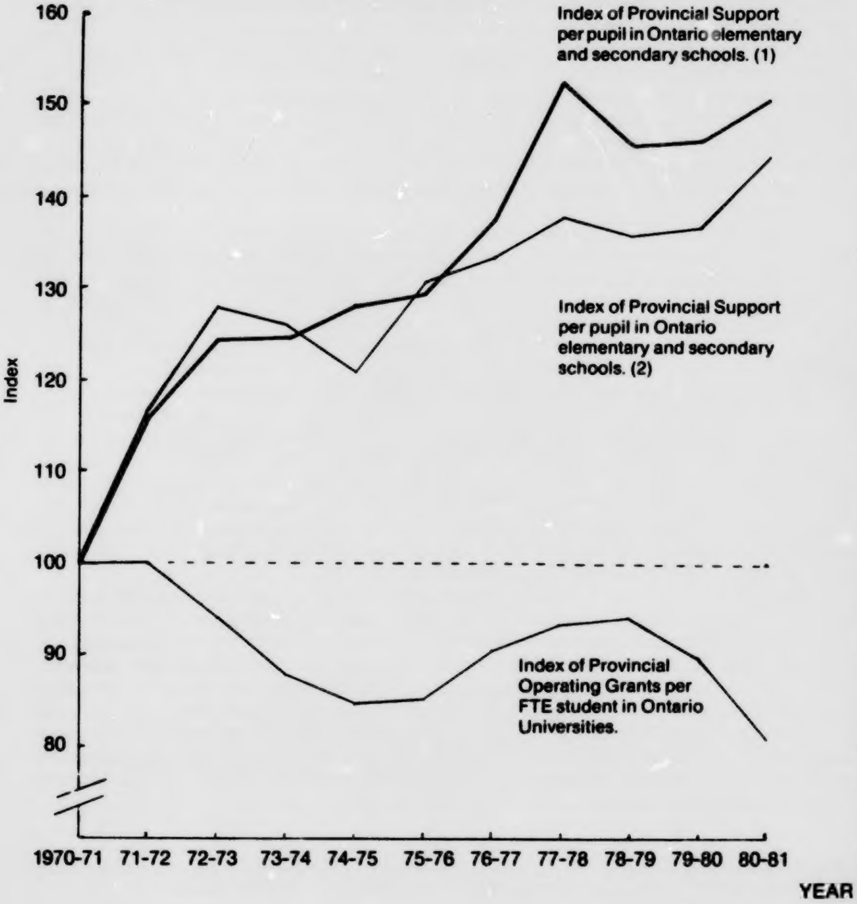
(2) Whenever the provincial contribution to the Teachers' Superannuation Fund is mentioned in this paper, it includes the provincial contribution on behalf of teachers to the Superannuation Fund and Superannuation Adjustment Benefits.

Figure 3

Comparison of Provincial Support per Student in Universities and in Elementary and Secondary Schools in Ontario, 1970-71 to 1980-81 (Constant 1970-71 = 100.0)



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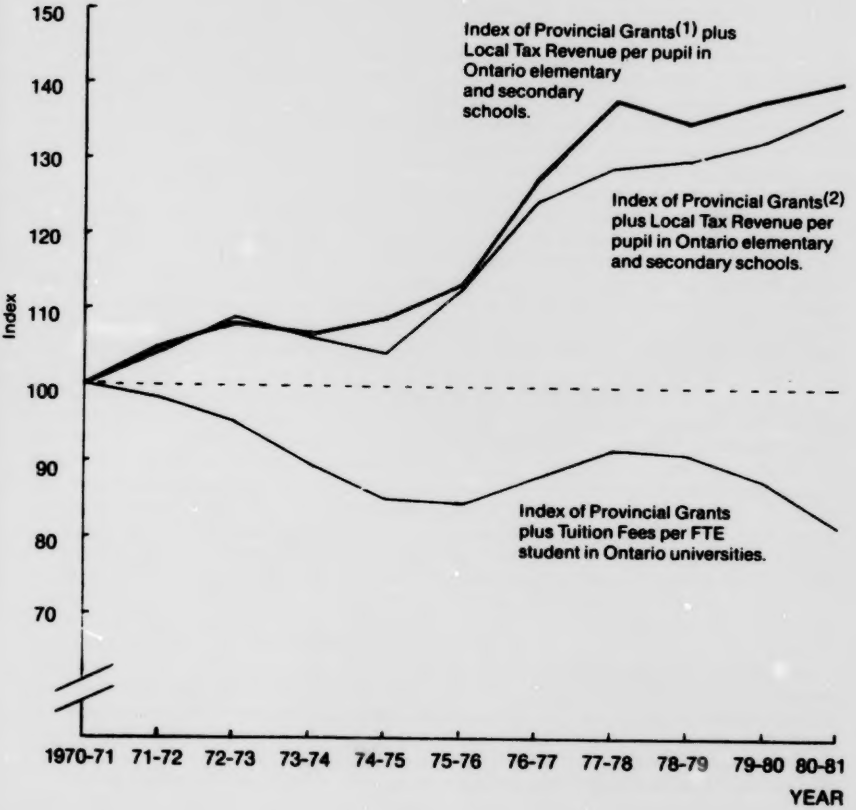
(1) Provincial grants to schools *include* the provincial contribution to the Teachers' Superannuation Fund.

(2) Provincial grants to schools *exclude* the provincial contribution to the Teachers' Superannuation Fund.

Source: Table 4 of Appendix.

Figure 4

Comparison of Revenue per Student in Universities and in Elementary and Secondary Schools in Ontario, 1970-71 to 1980-81 (Constant $ 1970-71, 1970-71 = 100.0)



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(1) Provincial grants to schools *include* the provincial contribution to the Teachers' Superannuation Fund.

(2) Provincial grants to schools *exclude* the provincial contribution to the Teachers' Superannuation Fund.

Source: Table 5 of Appendix.

(C) Enrolment Trends

From 1970-71 to 1980-81, total university system FTE enrolment increased by over 30%. The enrolment changes experienced by the universities during this period did not, however, follow general demographic trends, which suggested annual increases until 1983. Enrolment did increase annually from 1970-71 until 1976-77, when it peaked at a level about 37% above the level found in 1970-71. In the following two years, however, enrolment declined unexpectedly by over 6%, but since then has increased annually and, in 1981-82, is expected to exceed the peak experienced in 1976-77. In 1980-81, there were 154,820 full-time students and 34,462 part-time FTE students enrolled in Ontario universities and their affiliated colleges, Ryerson Polytechnical Institute and the Ontario Institute for Studies in Education, resulting in total FTE enrolment of 189,282.[3] The final report of The Committee on the Future Role of Universities in Ontario points out that the 18 to 24 age group, from which Ontario universities currently draw 77% of their enrolment, will continue to increase in number until 1983. The report goes on to point out that, after declining in the late 1970s, the participation of this group in university education is rising again.

The unpredictable nature of these fluctuations in enrolment and in the participation rate in recent years has made it extremely difficult for universities to undertake the financial planning necessary to adjust to the financial constraints they have experienced. In addition to the fluctuations in total system enrolment, the universities have had to adjust to significant shifts in enrolment among disciplines in recent years. Such shifts in enrolment required reallocation of resources within each university in order to accommodate student demand. These shifts in enrolment along with recent increases in total enrolment have made it difficult for the institutions to cope with the financial constraints by reducing faculty and staff resources.

Figures 5 and 6 illustrate what has happened to full-time undergraduate enrolment in commerce, engineering and in total arts and science for the period 1973-74 to 1980-81. Over this period, full-time undergraduate enrolment increased by 81.5% in commerce and 39.7% in engineering. Full-time undergraduate arts and science enrolment increased substantially from 1973-74 to 1976-77, then declined for the next three years and increased again in 1980-81. This resulted in a 3.8% increase in enrolment over the entire period, 1973-74 to 1980-81. Table 6 of the Appendix provides a breakdown of the university system's undergraduate enrolment in major disciplines and discipline sectors for the same period.[4] Full-time undergraduate enrolment increased, over the period identified, in all but two discipline sectors - humanities, and agriculture and biological sciences. Increases in full-time enrolment ranged from 13.6% in education to 45.3% in health professions and occupations. Over the same period, part-time undergraduate enrolment increased in all but one sector - general arts and science. Within some sectors, particular disciplines, such as commerce and engineering, experienced much larger full-time or part-time enrolment increases than the sector as a whole. Similarly, the drop in enrolment in some disciplines (such as zoology and history) exceeded that experienced by their sectors. Table 6 also indicates that over the period 1973-74 to 1980-81 there have been significant shifts in the share of total full-time or part-time undergraduate enrolment in particular sectors.[5]

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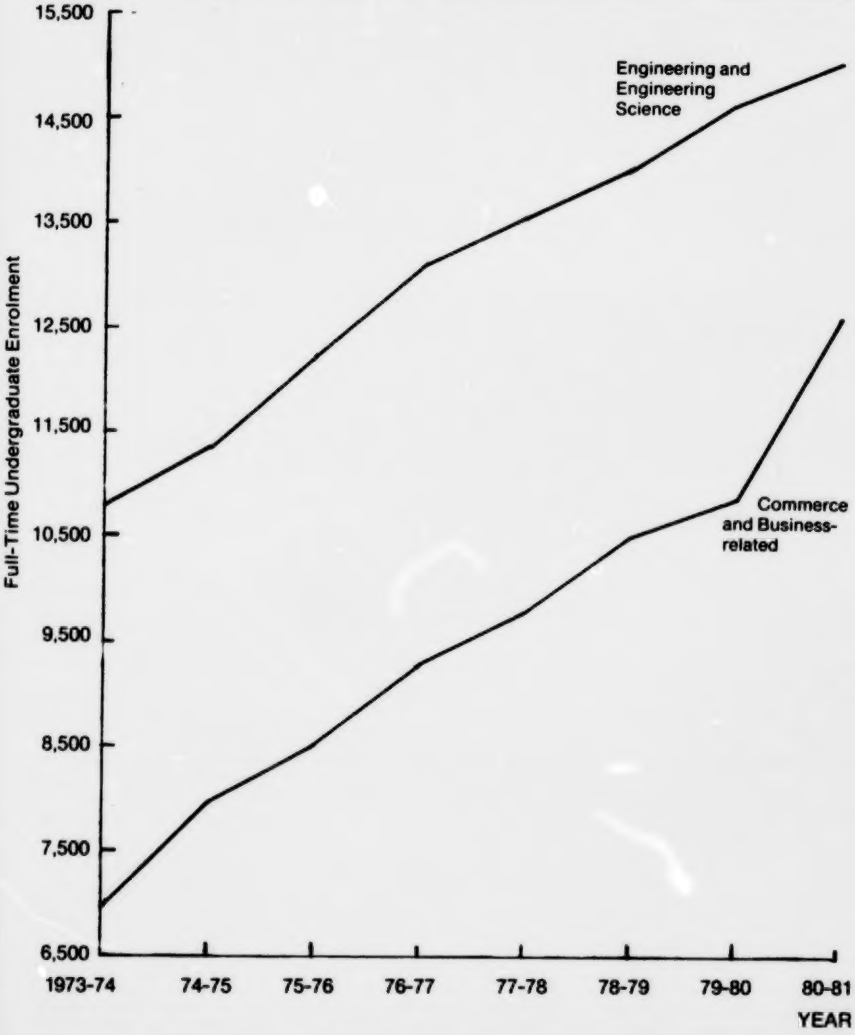
(3) Ministry of Colleges and Universities, *University Audit Reports: Financial Reports*, March 27, 1981, pp. 10-13.

(4) These data include enrolment at the provincially-assisted universities and their affiliated colleges, Ryerson Polytechnical Institute and the Ontario Institute for Studies in Education.

(5) Students enrolled in the University of Toronto's Faculty of Arts and Science are included under general arts and science in Table 5. The University of Toronto is unable to identify the disciplines in which these students are concentrating or majoring. However, the university has been able to provide Council with the number of full-course equivalents (FCEs) in each department of the Faculty of Arts and Science. These data appear to mirror the enrolment trends identified for the rest of the university system in Table 6 of the Appendix. For example, social sciences' share of total faculty course enrolments increased from 19.7% in 1973-74 to 25.1% in 1980-81, with commerce's share increasing from 3.4% to 6.9% during this period. On the other hand, humanities' share of total faculty FCEs declined from 38.1% in 1973-74 to 31.5% in 1980-81, while life sciences' share dropped from 13.6% to 10.1% over the same period.

Figure 5

Total Full-Time Undergraduate Enrolment in Commerce and Business-related and in Engineering and Engineering Science, 1973-74 to 1980-81

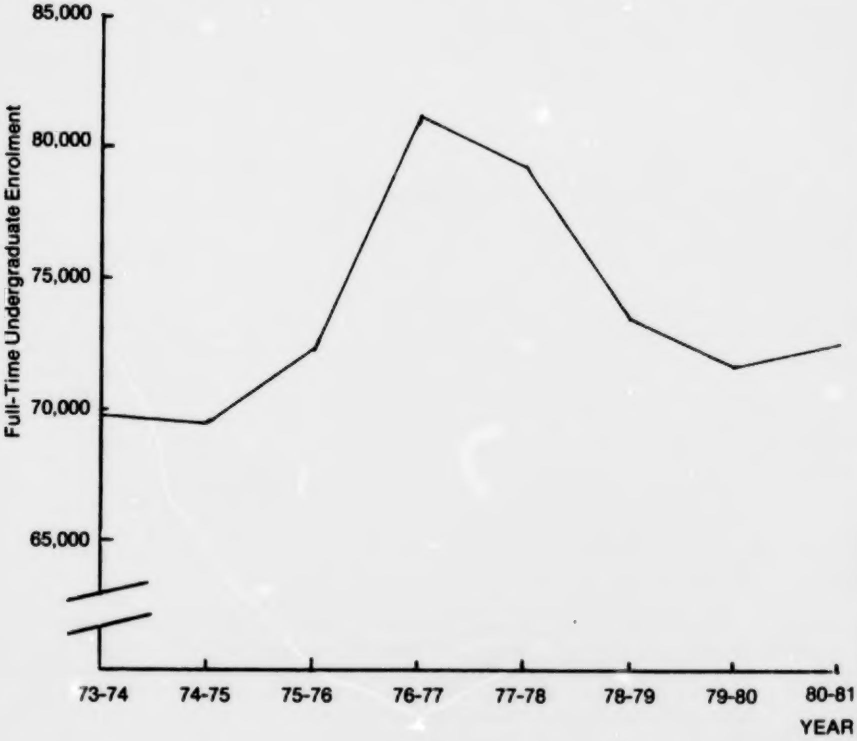


Note: Commerce and Business-related figures do not include Commerce at the University of Toronto. See footnotes 5 of the text.

Source: Table 6 of Appendix.

Figure 6

Total Full-Time Undergraduate Enrolment in Arts and Science, 1973-74 to 1980-81



Note: The discipline sectors included in the enrolment figures are: Humanity; Fine and Applied Arts; Social Sciences; Physical Sciences (excluding Computer Science for the years when separately identified); and Life Sciences, as roughly defined in Appendix "B" of *System Rationalization*. Figures are for the 15 provincially assisted universities and Ryerson.

Source: University Student Information System (USIS) 110100111.

Table 7 of the Appendix provides similar data on graduate enrolment. Unlike undergraduate student numbers, over the period 1973-74 to 1980-81, total full-time graduate enrolment declined. Significant enrolment declines occurred in humanities, health professions and occupations and in mathematics and physical sciences. The remaining sectors had full-time enrolment increases. Part-time enrolment increased in all but one sector - humanities. Surprisingly, disciplines such as zoology and anthropology, which experienced enrolment declines at the undergraduate level, experienced enrolment increases at the graduate level. Finally, the shifts in the share of total enrolment in individual sectors, over the period identified, were more marked at the graduate level than at the undergraduate level.

(D) Faculty and Staff Resources

Data obtained from the Council of Ontario Universities (COU) on the size of faculty complement are found in Table 8 of the Appendix. The number of full-time equivalent faculty positions in Ontario universities declined by 216 or 1.6% over the period 1977-78 to 1980-81. However, in the final year of this period, the faculty complement increased by 6 over the previous year. Over the period, full-time tenure stream positions increased by 30 or 0.2% while full-time limited term positions declined by 121 or 7.4% and FTE part-time declined by 124 or 6.9%. Other data provided by COU suggests that the non-academic staff complement in Ontario universities declined by about 5% over the period 1977-78 to 1980-81.[6]

The Committee on the Future Role of Universities in Ontario pointed out in its final report that compensation levels for Ontario universities' faculty have fallen behind the levels in other related occupations in Canada. The Committee indicated that: "Between 1972-73 and 1979-80, salaries of Ontario university faculty increased by 72.2 per cent. Comparable figures for engineers and research scientists (external to the universities) are 93.2 per cent and 84.2 per cent respectively."[7] Over the same period, the Consumer Price Index increased by about 85%.

According to Statistics Canada, in 1972-73, Ontario faculty had a higher mean salary than the other three major regions in Canada: the Western provinces, Quebec and the Atlantic provinces. However, by 1976-77, the mean salary of Ontario faculty had fallen below that of the Western provinces and Quebec. In the last year that consistent data were available, 1978-79, the mean salary of Ontario faculty was $29,463 compared with $30,120 for the Western provinces, $32,683 for Quebec and $24,723 for Atlantic provinces.

As Council noted in *A Financial Analysis of the Ontario University System - 1980*, the Conference Board in Canada's study *Compensation in Canada: A Study of the Private and Public Sectors* found that wages and salaries for non-academic positions in universities in 1978 were at the low end of the public and private sectors included in the study. There appears to have been no change in this situation.

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(6) Data were not available over the entire time period for Lakehead and York.

(7) CFRUO, *Report*, August 1981, p. 40.

(E) Equipment and Furniture Expenditures

Council pointed out in *A Financial Analysis of the Ontario University System - 1980* that in recent years the universities have responded to constraint by curtailing non-salary expenditures, such as those involving equipment and furniture. This trend continued in 1980-81. Table 9 of the Appendix contains data, for individual institutions and for the system as a whole, on the actual expenditures on equipment and furniture for the years 1976-77 to 1979-80 and the anticipated final expenditures on these items for 1980-81.[8]

Figure 7 is derived from Table 9 of the Appendix. It illustrates graphically what has happened to these expenditures on a system-wide basis, over the period 1976-77 to 1980-81, in both current and constant 1976-77 dollars. The constant dollar expenditures for 1977-78, 1978-79 and 1979-80 are deflated by the equipment and furniture component of the Ontario University Non-Salary Price Index (OUNSPI). Over the period 1976-77 to 1979-80 equipment and furniture expenditures increased by 12.4%, while the equipment and furniture component of OUNSPI increased by 36.7%, implying that the value of equipment and furniture declined significantly in real terms. The 1980-81 constant dollar figure shown in Table 9 of the Appendix was deflated by Council's estimate of the change in the total OUNSPI for that year. This figure indicates that equipment and furniture expenditures continue to decline in real terms.

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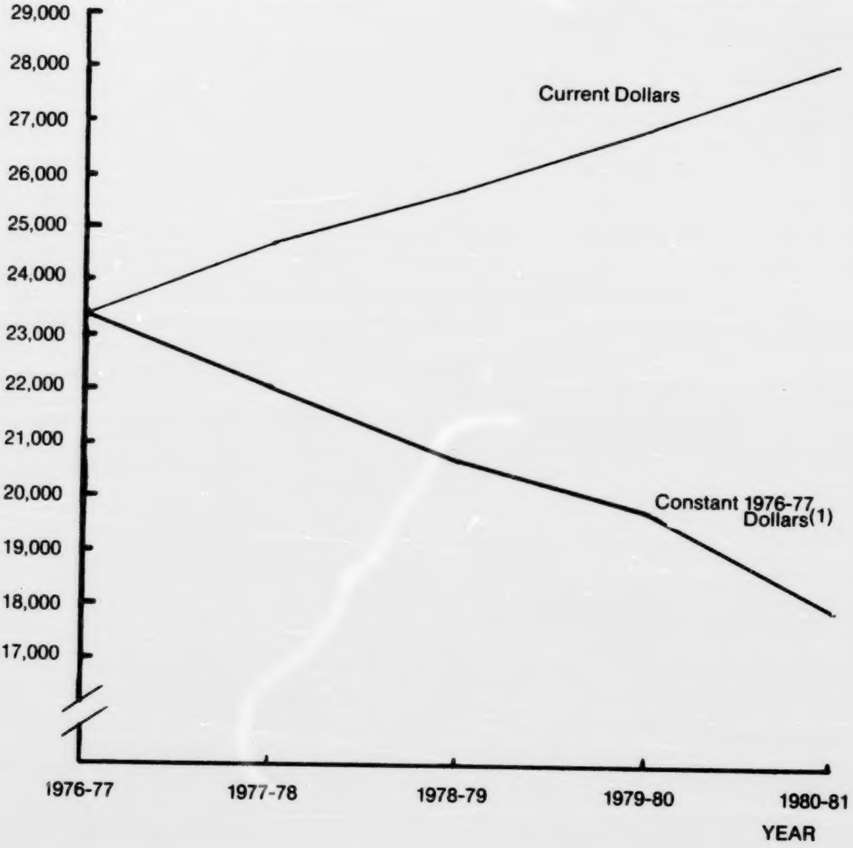
(8) It should be noted that over 80% of expenditures on equipment and furniture are devoted to equipment expenditures, including computer costs.

Figure 7

Equipment and Furniture Expenditures from Operating Income, 1976-77 to 1980-81



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(1) The 1977-78, 1978-79 and 1979-80 constant dollar figures were deflated by the equipment and furniture component of the Ontario University Non-Salary Price Index. The 1980-81 figure is deflated by Council's estimate of the change in the total OUNSPI for 1980-81.

Source: Table 9 of the Appendix.

(F) Library Books and Periodicals

Another area of non-salary expenditures the universities have curtailed in recent years is the acquisition of library books and periodicals. Table 10 of the Appendix outlines the expenditures on library acquisitions for individual institutions and for the system, measured in constant 1972-73 dollars.(9) Over the period 1972-73 to 1980-81, the total value of library acquisitions for Ontario universities declined by over 34% when measured in constant dollars. This decline is illustrated graphically in Figure 8.

It was pointed out in *A Financial Analysis of the Ontario University System - 1980* that the decline in library acquisitions, since 1972-73, was attributable not only to the pressures of general financial constraints, but also to exceptional increases in the prices of books and periodicals. During the period 1972-73 to 1980-81, library acquisition expenditures increased by about 85%, while over the same period monograph and periodical prices increased by about 155% and 230% respectively. This resulted in a real decline in library expenditures of 35%. It appears that the institutions have dealt with the dramatic increase in the cost of maintaining periodical subscriptions by shifting more and more financial resources towards the acquisition of periodicals and away from the purchase of monographs. In 1972-73, Ontario universities allocated only 37% of their library acquisitions expenditures towards periodicals, with the remaining 63% being spent on book purchases. By 1979-80, Ontario institutions allocated 53% of their acquisitions expenditures towards the purchase of periodicals and only 47% towards the acquisition of monographs. Consequently, there has been a substantial reduction in the number of monographs acquired annually.

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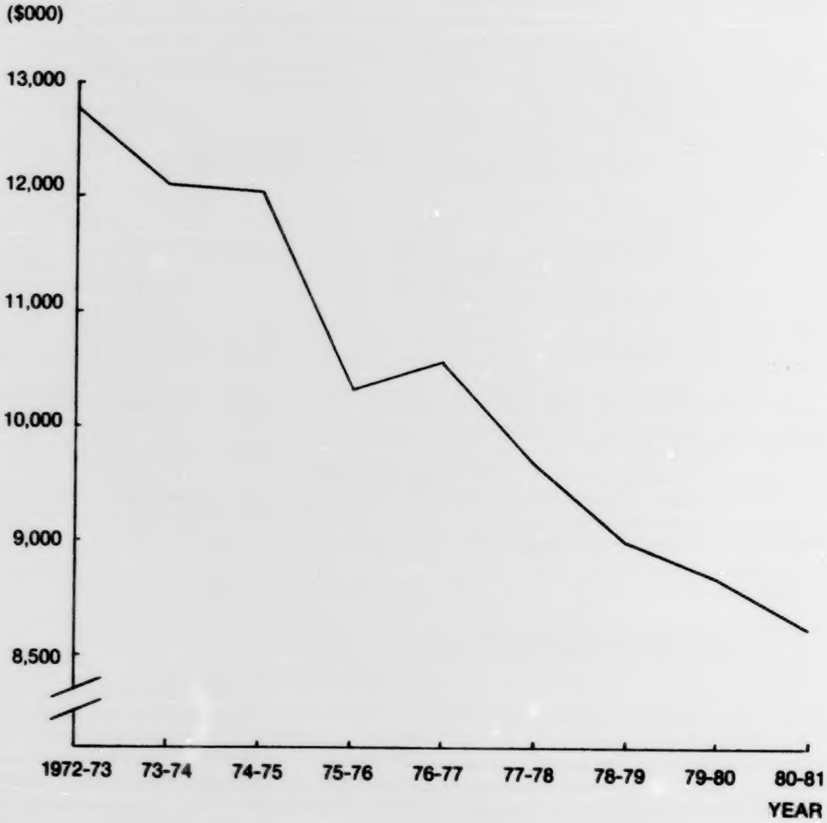
(9) The price deflator used to calculate constant dollar values for 1972-73 to 1979-80 was the books and periodicals component of the Ontario University Non-Salary Price Index. The remaining year of data was deflated by a books and periodicals inflation estimate provided by Queen's University at Council's request.

Figure 8

Expenditures on Library Acquisitions from Operating Income, 1972-73 to 1980-81. ($000 constant 1972-73)



Note: See footnote 9 of the text

Source: Table 10 of the Appendix.

(G) Capital Funding

The Government of Ontario, over the decades, has made a major investment in the Ontario university system. The size of this investment is illustrated in Table 11 of the Appendix. This table indicates that over a billion dollars has been invested since 1944, through capital grants and debentures, and that over 80% of this investment occurred during the period 1964-65 to 1973-74 when the physical plant of the university system underwent a major expansion. Since that period, there has been little or no capital expansion and increasingly restricted capital funding for repairs, renovations and replacement projects.

In recent years, the constraints on capital funding have been even more severe than those imposed on operating support. Table 12 of the Appendix outlines the capital grants made available to the universities and Council's recommendations since 1976-77. In its advice to Government, Council has consistently selected a level of 1% of the replacement value of the space inventory of the universities as the minimum needed annually for new major repairs, renovations and replacement projects (excluding any amounts necessitated by carry-overs) in order to maintain the existing capital investment.[10] As Table 12 indicates, Government funding for "new starts" of major repairs, renovations and replacement projects has fallen well short of the recommendations generated by this factor. For 1981-82, for example, Council recommended $21.2 million be provided for these purposes, but only $6.3 million have been made available by Government. Over the period in which Council has provided capital funding recommendations (1976-77 to 1981-82), Government support has fallen $68.7 million short of Council's total recommendations.

Council's capital recommendations pertain to new major repairs, renovations and replacement projects. As Table 12 indicates, over the past few years, the majority of Government capital support has not been directed towards these projects. Instead, most Government capital support has been directed towards the continued funding (carry-over) of existing major repairs, renovations and replacement projects, carry-over cost of projects involving the construction of additional space, and support for new projects involving construction of additional space. Table 12 shows that funding of these projects has also become restricted in recent years. In fact, for the past two years, total capital grants, which include grants for both new starts and carry-overs, have not even met Council's recommended allotment for new major repairs, renovations and replacement projects.

(H) Allocative Formula

While the current financial difficulties faced by Ontario universities can be attributed directly to system underfunding, concern has been expressed to Council about the method of distribution of the limited funds available. Most of the Government operating support is allocated among the universities according to an enrolment related formula. Table 13 of the Appendix outlines the formula operating grants allocated annually by this formula to the universities and their affiliated colleges, Ryerson Polytechnical Institute, the Ontario Institute for Studies in Education and the Ontario College of Art, for the years 1977-78 to 1981-82. This table also lists the total formula operating grants received by each institution during the three year "base period", 1974-75 to 1976-77. Although the formula relies on enrolment as the means of determining the allocation of operating grants, the influence that any one year of enrolment has on the grant allocation has been reduced substantially.

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(10) See Advisory Memorandum 77-IV for further information on Council's capital recommendations.

This has been brought about through the use of the three year moving average and base period enrolments in calculating the number of funding Basic Income Units (BIUs) for each institution.

Over the past few years, it has been suggested to Council that the operating grants formula in its present form is either too sensitive or, conversely, too insensitive to enrolment. Tables 14 and 15 of the Appendix attempt to provide comparisons of the existing allocative mechanism with two extremes: a completely enrolment driven mechanism based on "slip-year" enrolments, and a completely enrolment insensitive mechanism or "fixed-share" funding mechanism where, annually, each institution receives the same percentage increase in funding.

Table 14 illustrates, for the period 1977-78 to 1981-82, the effects of a "slip-year" or enrolment driven mechanism, documenting the differences between the actual formula grants allocated to each institution and the grants that would have been allocated if each institution had been funded according to the previous year's Basic Operating Income less formula fees. Table 15 illustrates, for the same period, the effects of a "fixed share" or enrolment insensitive funding mechanism, documenting the differences between actual formula grants allocated to each institution and the grants that would have been allocated if the share of total formula grants accruing annually was fixed according to the institution's share of total formula grants during the funding base years (1974-75 to 1976-77).

Predictably, most institutions that would have been benefited under the enrolment driven formula would have lost funds under the fixed share funding scheme, or vice versa. For example, the University of Western Ontario would have gained an extra $8.7 million under the fixed share or enrolment insensitive funding mechanism over the period examined. Under the "slip-year" or enrolment driven mechanism, Western would have received over $3.5 million less than it actually received over this period. However, a few institutions would have either gained or lost under both hypothetical allocative mechanisms. The University of Toronto would have gained an extra $2.7 million under the enrolment driven mechanism or an extra $25.5 million under the enrolment insensitive mechanism. Alternatively, the University of Guelph would have lost $3.8 million and $0.8 million under the enrolment driven mechanism and enrolment insensitive mechanism, respectively.

It is not Council's intention to use these examples as an endorsement of the present allocative mechanism. They are merely examples of the effects of possible, although extreme, modifications to the allocative mechanism that have been suggested from time to time. However, it is interesting to note that, in contrast with the slip-year enrolment mechanism, the present allocative mechanism's provisions for buffering institutions' funding from the effects of wide fluctuations in enrolment appear to be reasonably effective, stabilizing funding from year to year.

(I) Research

In previous financial papers, Council expressed a number of concerns about the impact of underfunding on university research. These concerns remain, but they will not be reiterated at this time. However, some developments have occurred in the past year that should be noted.

The national granting agencies, the National Sciences and Engineering Research Council (NSERC), the Medical Research Council (MRC) and the Social Sciences and Humanities Research Council (SSHRC) received budget increases of 23.9%, 22.3% and 9.4% respectively for 1981-82. Since its inception in 1978, NSERC's budget has more than doubled to its present level of $201.4 million. MRC's budget has grown to a level of $100.2 million and SSHRC's budget now stands at $45.6 million.

Council noted in *A Financial Analysis of the Ontario University System - 1980* that NSERC had begun a program of University Research Fellowships aimed at expanding career opportunities in research in the natural sciences and engineering. This program has continued in 1981-82, with up to 75 new fellowships being granted at a value of $25,800 each.

Council is encouraged by the Government of Ontario's planned initiatives to affect positively the research undertaken by government, business and industry, and the universities in the province. In *Building Ontario in the 1980's*, Government stated that under the Board of Industrial Leadership and Development (BILD) program "additional funding will be provided to purchase modern research equipment for engineering and science in Ontario universities". It also stated that "a research grant incentive program will be established to provide additional funds to university researchers receiving new or expanded research contracts from industry or governments". Finally, Council notes that the IDEA Corporation (Innovation Development of Employment Advancement) will be asked to promote coordination of provincial research and development activities among the universities, industry and Government. In this regard, however, Council shares the concerns expressed by the Committee on the Future Role of Universities in Ontario that:

> Independent initiatives on the part of the IDEA Corporation could risk distorting university missions.
>
> OCUA should be informed of, and be free to comment on, the initiatives proposed by BILD or the IDEA Corporation which affect the universities so that such initiatives can be coordinated with the responsibilities of MCU and the advice of OCUA.[11]

Summary

Since Council's advice was last accepted in 1977-78, the universities have received annual operating grant increases of 5.8%, 5.1%, 7.2% and 10.1%. Government budgetary expenditures (excluding debt servicing) experienced annual increases of 6.7%, 9.9%, 9.4% and 12.5% for the same four years, 1978-79 to 1981-82. These figures indicate that the universities have received a declining share of Government expenditures. When deflated by the Consumer Price Index, it is estimated that by the end of the period cited above, university operating grants will have declined in real terms by 12% to 13%, while Government budgetary expenditures will have declined by 4% to 5%.

When compared with universities in other provincial jurisdictions, Ontario universities fared poorly in terms of Government operating support and operating income. In 1974-75, Ontario ranked seventh in operating grants per FTE student and sixth in operating income per FTE student. By 1979-80, Ontario ranked ninth in both categories. In order for Ontario universities to have been funded at the same level of operating grants per FTE student as the weighted average of the other nine provinces in Canada in 1979-80, the Government of Ontario would have had to increase its operating grants by over $197 million in that year alone. (*Section A*)

Government operating support and revenue received by Ontario universities has lagged behind that received by elementary and secondary schools in the province. Over the period 1970-71 to 1980-81, university operating grants per FTE student and university revenue per FTE student declined in real terms by 17% and 18% respectively. On the other hand, over the same period, elementary and secondary school support per pupil and elementary secondary school revenue per pupil increased in real terms by 50% and 40%

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[11] CFRUO, *Report*, August 1981, p. 33

respectively, when the provincial contribution to the Teachers' Superannuation Fund is included and by 45% and 37% respectively, when it is excluded. (*Section B*)

The universities have experienced significant fluctuations in total enrolment and shifts in enrolment among disciplines in recent years. Full-time undergraduate enrolment in commerce and engineering, for example, has increased by 82% and 40% respectively, while full-time undergraduate humanities enrolment declined by 11%. The shifts in enrolment among disciplines in particular, have curtailed the institutions' ability to respond effectively to the financial restrictions the universities have had to face in recent years by creating significant resource allocation problems. (*Section C*)

Salaries and wages of the faculty and staff of the universities have not kept pace with those in other sectors of the economy. The mean salary for faculty in Ontario universities has also lagged behind that of the Western provinces and Quebec. (*Section D*)

The universities have responded to the recent financial constraints by curtailing expenditures on non-salary items such as equipment and furniture and library book and periodical acquisitions. Over the period 1976-77 to 1980-81, equipment and furniture expenditures declined in real terms by about 23%. Over a longer period, 1972-73 to 1980-81, expenditures on library book and periodical acquisitions declined in real terms by about 35%. By the end of this period, only 47% of these expenditures were devoted to the purchase of monographs, compared with 63% at the beginning of the period. (*Sections E and F*)

In recent years, the constraints on capital funding have been even more severe than those imposed on operating support. Over the period in which Council has provided capital funding recommendations (1976-77 to 1981-82), Government support has fallen short of Council's total recommendations by $68.7 million. (*Section G*)

Although the present allocative mechanism relies on enrolment as the means of determining the allocation of operating grants, the influence of enrolment is modified by the averaging and discounting provisions found in the formula. Not surprisingly, some institutions would have gained if the grant allocation formula were more enrolment sensitive and others would have gained if the allocative mechanism were less enrolment sensitive. (*Section H*)

There have been some developments in the area of research funding in the past year. NSERC, MRC and SSHRC had budget increases of 23.9%, 22.3% and 9.4% respectively for 1981-82. Under the BILD program additional funding is expected to be available for the purchase of modern research equipment for engineering and sciences in Ontario universities. (*Section I*)

APPENDIX

TABLE 1

Interprovincial Comparison of University Grants: Provincial Operating Grants per FTE Student, 1974-75 to 1979-80

	1974-75		1975-76		1976-77		1977-78		1978-79		1979-80	
	$	Rank	$	Rank	$	Rank	$	Rank	$	Rank	$	Rank
British Columbia	3,029	4	3,577	4	4,049	4	4,521	3	5,025	3	5,479	3
Alberta	3,345	1	4,053	1	4,358	1	4,797	1	5,358	2	5,830	2
Saskatchewan	2,977	5	3,410	5	3,767	5	4,107	5	4,590	5	5,096	5
Manitoba	2,594	8	3,016	6	3,453	6	3,874	7	4,123	7	4,677	7
Quebec	3,057	3	3,750	3	4,079	3	4,449	4	4,657	4	5,299	4
New Brunswick	2,704	6	3,003	7	3,445	7	3,905	6	4,364	6	4,762	6
Nova Scotia	2,431	9	2,836	9	3,233	9	3,497	9	3,819	9	4,074	10
P.E.I.	2,414	10	2,589	10	2,974	10	3,030	10	3,544	10	4,246	8
Newfoundland	3,079	2	3,809	2	4,157	2	4,625	2	5,485	1	5,994	1
Weighted average for 9 provinces other than Ontario	2,983		3,577		3,950		4,347		4,706		5,249	
Ontario	2,690	7	2,913	8	3,265	8	3,669	8	4,002	8	4,140	9
Canada	2,871		3,322		3,687		4,097		4,456		4,851	

Source: Third Report of the Tripartite Committee on Interprovincial Comparisons, December 1981, p. 8.

TABLE 2

Interprovincial Comparison of University Revenue: Total Operating Income per FTE Student, 1974-75 to 1979-80

	1974-75		1975-76		1976-77		1977-78		1978-79		1979-80	
	$	Rank	$	Rank	$	Rank	$	Rank	$	Rank	$	Rank
British Columbia	3,682	4	4,312	4	4,871	2	5,344	3	5,886	3	6,241	3
Alberta	3,839	2	4,525	2	4,839	3	5,371	2	6,024	2	6,613	2
Saskatchewan	3,692	3	4,238	5	4,609	5	5,049	5	5,662	5	6,232	4
Manitoba	3,030	10	3,579	9	3,996	8	4,441	8	4,780	9	5,422	7
Quebec	3,643	5	4,373	3	4,743	4	5,165	4	5,347	4	5,890	5
New Brunswick	3,322	7	3,664	8	4,085	7	4,582	7	4,830	8	5,690	6
Nova Scotia	3,303	8	3,850	6	3,934	9	4,300	9	4,930	7	5,257	8
P.E.I.	3,219	9	3,360	10	3,394	10	3,256	10	4,418	10	4,973	10
Newfoundland	3,844	1	4,930	1	5,438	1	6,344	1	6,821	1	7,222	1
Weighted average for 9 provinces other than Ontario	3,592		4,251		4,634		5,094		5,476		6,002	
Ontario	3,502	6	3,714	7	4,094	6	4,594	6	5,038	6	5,239	9
Canada	3,558		4,045		4,426		4,910		5,320		5,729	

Source: Third Report of the Tripartite Committee on Interprovincial Comparisons, December 1981, p. 12

TABLE 3

Interprovincial Comparisons, 1980-81 and 1981-82

	% Increase in Grants		% Increase in Fee Rates[1]		% Change in FTE Enrolment[2]	
	1980-81	1981-82	1980-81	1981-82	1980-81	1981-82
British Columbia	9.3	14.9	8.3-10.0	13.0-14.0	3.0	5.8
Alberta	12.0	17.1	10.0	0.0	0.0	9.0
Saskatchewan	8.5	12.0	5.3-8.3	7.0-10.0	2.4	8.0
Manitoba	8.3	13.8	7.9	8.9-10.5	1.9	4.0
Ontario	7.2	10.1	7.5-18.3[3]	10.0-21.0[3]	3.5	4.5
Quebec	13.9	6.7	0.0	0.0	2.8	2.5
New Brunswick	7.9	10.2	7.6	10.0-12.0	4.4	3.0 to 4.0
Nova Scotia	11.7	12.4	7.4	10.0-12.0	2.7	3.5
P.E.I.	7.9	9.7	9.5	10.0-12.0	-2.9	1.4
Newfoundland	10.0	8.9	0.0	10.0	0.4	N.A.

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(1) Fee increases may differ among institutions and programs within institutions. When no range of increases is provided, the figure represents a rough average of fee increases across the province.

(2) Enrolment changes for 1981-82 are estimates.

(3) Comprised a formula fee rate increase of 7.5% in 1980-81 and 10.0% in 1981-82 and a discretionary fee rate increase of up to 10% of the formula fee rate.

TABLE 4

Comparison of Provincial Support per Student in University and in Elementary and Secondary Schools in Ontario in Constant 1970-71 Dollars, 1970-71 = 100.00, 1970-71 to 1980-81

	Index of Provincial Operating Grants per FTE University Student	Index of Provincial Support per Elementary and Secondary Pupil[1]	Index of Provincial Support per pupil, excluding Teachers' Superannuation
1970-71	100.0	100.0	100.0
1971-72	100.0	116.3	116.7
1972-73	94.0	124.6	127.8
1973-74	87.9	124.8	126.0
1974-75	84.8	128.0	120.9
1975-76	85.1	129.6	130.7
1976-77	90.6	137.7	133.7
1977-78	93.6	152.1	137.8
1978-79	94.0	145.8	135.9
1979-80	89.6	146.4	136.9
1980-81	83.2	150.1	144.9

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(1) Provincial Grants to schools include the provincial contribution to the Teachers' Superannuation Fund.

Note: Indexes are in constant 1970-71 dollars, deflated by the January CPI for each year.

Sources: Ministry of Colleges and Universities
Ministry of Education

TABLE 5

Comparison of Revenue per Student in Universities and in Elementary and Secondary Schools in Ontario in Constant 1970-71 Dollars, 1970-71 = 100.00, 1970-71 to 1980-81

	Index of Provincial Operating Grants Plus Tuition Fees Per FTE University Student	Index of Provincial Grants plus Local Tax Revenue per Elementary and Secondary School Pupil[1]	Index of Provincial Grants plus Local Tax Revenue per Pupil, excluding Teachers' Superannuation
1970-71	100.0	100.0	100.0
1971-72	98.3	105.5	105.3
1972-73	95.6	108.0	108.8
1973-74	89.8	106.9	106.7
1974-75	85.4	109.1	104.6
1975-76	84.3	113.4	113.2
1976-77	88.0	127.4	124.8
1977-78	91.8	137.5	129.5
1978-79	91.3	135.5	130.1
1979-80	87.3	138.0	132.9
1980-81	81.8	140.4	137.3

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(1) Provincial Grants to schools include the provincial contribution to the Teachers' Superannuation Fund.

Note: Indexes are in constant 1970-71 dollars, deflated by the January CPI for each year.

Sources: Ministry of Colleges and Universities
Ministry of Education

TABLE 6

Full-Time and Part-Time FTE Undergraduate Enrolment by Discipline Sector, 1973-74 to 1980-81

		1973-74		1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81		% change 1973-74 to 1980-81
		number	% share of total							number	% share of total	
Education	FT	8,433	7.3	9,540	11,035	11,638	10,718	10,007	9,187	9,581	6.7	13.6
	PT	129	1.1	183	233	239	359	586	1,404[1]	2,082[1]	15.0	1,514.00
Physical Education[2]	FT	4,862	4.2	5,302	5,521	5,720	5,632	5,585	5,428	5,447	3.8	12.0
	PT	39	0.3	71	97	69	75	86	113	75	0.5	92.3
Fine and Applied Arts	FT	4,734	4.1	5,103	5,277	5,516	6,608	6,566	6,255	6,542	4.6	38.2
	PT	203	1.7	241	271	250	557	628	770	760	5.5	274.4
Humanities & Related	FT	11,130	9.6	11,508	11,668	12,312	11,602	10,255	10,329	9,872	7.0	(11.3)
	PT	1,164	9.9	1,285	1,397	1,352	1,430	1,327	1,216	1,228	8.9	5.5
Social Science and Related	FT	26,638	22.9	28,583	32,525	33,974	34,495	34,675	33,836	35,960	25.4	35.0
	PT	2,935	24.8	3,124	3,790	3,781	3,677	3,786	3,583	3,857	27.8	31.4
Commerce and Business[2]	FT	6,991	6.0	7,954	8,501	9,324	9,786	10,568	10,839	12,686	8.9	81.5
	PT	523	4.4	648	833	892	902	1,049	1,115	1,262	9.1	141.3
Agriculture & Biological Science	FT	8,356	7.2	9,232	9,256	9,430	9,180	8,789	7,934	7,678	5.4	(8.1)
	PT	138	1.2	177	205	183	168	164	162	157	1.1	13.8
Engineering & Applied Sciences	FT	12,614	10.8	13,414	14,435	15,566	15,947	16,466	16,941	17,396	12.3	37.9
	PT	180	1.5	239	287	292	283	312	329	364	2.6	102.2
Engineering & Engineering Sci.[2]	FT	10,796	9.3	11,388	12,260	13,195	13,594	14,090	14,710	15,085	10.6	39.7
	PT	168	1.4	218	257	249	236	258	281	301	2.2	79.2
Health Professions & Occupations	FT	7,118	6.1	7,827	8,275	8,819	9,733	9,892	10,416	10,346	7.3	45.3
	PT	81	0.7	89	128	140	166	169	161	165	1.2	103.7
Mathematics & Physical Sciences	FT	6,961	6.0	7,731	8,020	8,203	8,285	8,285	7,875	8,792	6.2	26.3
	PT	337	2.8	333	336	324	328	346	375	417	3.0	23.7
General Arts & Science	FT	30,278	26.0	27,743	26,652	33,384	31,531	30,430	33,986	35,614	25.1	17.6
	PT	6,665	56.3	5,874	6,023	5,620	5,355	4,933	5,082	4,846	34.9	(27.3)
Total[3]	FT	116,262	100.0	120,681	127,143	138,842	138,099	135,365	136,759	141,781	100.0	21.9
	PT	11,832	100.0	11,545	12,670	12,181	12,323	12,251	13,082	13,876	100.0	17.3
Not Applicable & Not Reported	FT	6,208		9,931	10,773	4,961	4,610	3,632	2,912	3,196		
	PT	3,271		4,727	4,865	4,962	6,794	7,249	7,807	7,968		
TOTAL FTE		137,573		146,884	155,451	160,946	161,826	151,497	160,560	166,821		21.3

(1) The universities' part-time education enrolment increased rapidly when the universities assumed responsibility for courses previously operated by the Ministry of Education.

(2) These enrolment figures are included in the sector total immediately above.

(3) These figures do not include "Not Applicable" and "Not Reported" student numbers.

Source: UBIS 110100111 and 110100112.

TABLE 7

Full-Time and Part-Time FTE Graduate Enrolment by Discipline Sector, 1973-74 to 1980-81

		1973-74		1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81		% change 1973-74 to 1980-81
		number	% share of total							number	% share of total	
Education	FT	1,071	6.8	803	898	1,054	1,040	1,031	1,103	1,158	7.7	8.1
	PT	761	27.8	830	924	1,052	1,030	991	998	983	29.6	29.2
Physical[1] Education	FT	66	0.4	98	117	128	144	147	182	213	1.4	222.7
	PT	19	0.7	14	13	21	21	23	26	23	0.7	(21.1)
Fine and Applied Arts	FT	206	1.3	190	193	199	253	246	256	300	2.0	45.6
	PT	14	0.5	18	21	24	23	25	27	26	0.8	85.7
Humanities & Related	FT	3,129	19.8	3,180	3,136	3,138	3,274	3,244	2,807	2,743	18.1	(12.3)
	PT	470	17.2	447	457	472	521	548	482	439	13.2	(6.6)
Social Sciences and Related	FT	5,395	34.2	5,484	5,987	6,091	5,990	5,980	5,797	5,869	38.7	8.8
	PT	971	35.5	1,026	1,158	1,195	1,188	1,163	1,194	1,258	37.8	29.6
Commerce and Business Related[1]	FT	1,443	9.1	1,352	1,551	1,615	1,622	1,666	1,786	1,895	12.5	31.3
	PT	491	18.0	462	566	605	568	569	605	660	19.8	34.4
Agriculture & Biological Science	FT	806	5.1	606	671	1,091	1,066	1,029	1,080	1,157	7.6	43.5
	PT	56	2.1	43	46	56	60	55	57	64	1.9	14.3
Engineering & Applied Sciences	FT	1,409	8.9	1,473	1,540	1,597	1,500	1,392	1,426	1,521	10.0	7.9
	PT	290	10.6	330	372	325	313	293	317	313	9.4	7.9
Engineering & Engineering Sci.[1]	FT	1,376	8.7	1,429	1,495	1,522	1,433	1,324	1,356	1,443	9.5	4.9
	PT	283	10.4	325	365	317	304	286	312	309	9.3	9.2
Health Professions & Occupations	FT	2,078	13.2	1,941	1,895	1,704	751	852	925	932	6.2	(55.1)
	PT	46	1.7	45	46	89	97	99	114	106	3.2	130.4
Mathematics & Physical Sciences	FT	1,688	10.7	1,628	1,760	1,798	1,636	1,518	1,416	1,470	9.7	(12.9)
	PT	125	4.6	145	142	127	134	141	135	136	4.1	8.8
Total[2]	FT	15,782	100.0	15,305	16,080	16,672	15,510	15,292	14,810	15,150	100.0	(4.0)
	PT	2,733	100.0	2,884	3,166	3,340	3,366	3,315	3,324	3,325	100.0	21.7
Not Applicable & Not Reported	FT	500		1,216	1,569	481	147	129	142	118		
	PT	135		189	225	184	158	155	135	131		
TOTAL FTE		19,150		19,594	21,040	20,677	19,181	18,891	18,411	18,724		(2.2)

(1) These enrolment figures are included in the sector totals immediately above.

(2) These figures do not include "Not Applicable" and "Not Reported" student numbers.

Source: USIS 110100113 and 110100114.

TABLE 8

Academic Staff Complements, 1977-78 to 1980-81[1]

	1977-78	1978-79	1979-80	1980-81
Full-Time Tenure Stream	9,808	9,926	9,795	9,838
Full-Time Limited Term	1,643	1,584	1,584	1,522
FTE of Part-Time	1,815.9	1,751.3	1,666.6	1,691.4
TOTAL FTE	13,266.9	13,261.3	13,045.6	13,051.4

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(1) Data were not available for: Algoma, Nipissing, Hearst and Dominican College, the Ontario College of Art and the church-related affiliates of the provincially assisted universities. Full-time faculty is reported as of October 1st of each year.

Source: Council of Ontario Universities.

TABLE 9

Equipment and Furniture Expenditures from Operating Income ($000) 1976-77 to 1979-80

	1976-77	1977-78	1978-79	1979-80	1980-81
Brock	271	238	206	321	316
Carleton	1,023	1,209	1,230	976	1,068
Guelph	1,633	1,482	1,812	2,109	1,886
Lakehead	291	355	346	430	762
Laurentian	188	307	312	252	194
Nipissing	63	33	26	20	28
Hearst	68	17	19	25	3
McMaster	1,414	1,718	2,035	1,371	1,381
Ottawa	1,301	1,395	1,563	2,214	2,652
Queen's	1,574	803	1,182	1,474	1,608
Toronto	4,704	5,814	7,003	5,964	6,975
Trent	160	138	118	111	112
Waterloo	2,432	3,099	2,255	2,720	2,593
Western	3,138	3,336	3,283	3,409	4,450
WLU	574	556	565	522	501
Windsor	1,064	1,010	975	1,241	1,470
York	1,210	948	1,439	1,759	1,389
Ryerson	2,057	1,941	956	1,176	618
OISE	251	260	349	221	135
TOTAL	23,416	24,686	25,674	26,315	28,141
(constant 1976-77 $s)	(23,416)	(22,041)	(20,655)	(19,250)	(17,936)

Notes:

(1) Excludes Algoma College since data were not available for 1976-77.

(2) The price deflator used for calculating constant dollar values for 1977-78 to 1979-80 was the Equipment, Computer and Furniture component or the Ontario Universities' Non-Salary Price Index. The price deflator used for 1980-81 was Council's estimate of the value of the total Ontario Universities' Non-Salary Price Index. The percentage increases in the Equipment, Computer and Furniture component of the index were quite similar to those experienced by the total index in the first four years of the table.

Source: COFO-UO Financial Reports for 1976-77, 1977-78, 1978-79 and 1979-80. Anticipated final expenditures obtained from the universities for 1980-81.

TABLE 10

Expenditures on Library Acquisitions from Operating Income, 1972-73 to 1980-81
($000's constant 1972-73)

	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
Brock	213	214	252	264	219	208	184	173	146
Carleton	824	847	866	650	681	685	548	494	389
Guelph	565	608	635	505	635	550	541	378	515
Lakehead	287	296	263	236	257	258	203	195	171
Laurentian	300	254	246	218	200	192	167	143	124
McMaster	830	915	974	860	1,016	894	902	872	784
Ottawa	1,378	1,210	1,048	844	762	704	654	642	653
Queen's	1,001	817	868	716	709	612	581	658	596
Toronto	2,222	2,209	1,902	1,853	1,693	1,653	1,633	1,654	1,635
Trent	235	195	252	241	235	230	177	178	144
Waterloo	933	987	997	766	762	794	735	698	634
Western	1,352	1,029	1,097	1,108	1,246	956	965	923	894
Wilfrid Laurier	235	273	436	365	361	345	307	260	250
Windsor	605	675	756	635	693	602	505	478	430
York	1,320	1,187	998	934	819	741	699	725	662
Ryerson	250	278	337	77	227	198	130	155	153
OISE	128	125	116	90	79	80	77	71	62
TOTAL	12,678	12,119	12,043	10,362	10,594	9,702	9,008	8,697	8,242

Note: The price deflator used for calculating constant dollar values for 1972-73 to 1979-80 was the Books and Periodicals component of the Ontario Universities' Non-Salary Price Index. The price deflator used for 1980-81 was estimated by Queen's University at Council's request.

Source: Council of Ontario Universities for the years 1972-73 to 1977-78.
COFO-UO Financial Reports for 1978-79 and 1979-80.
Anticipated final expenditures obtained from the universities for 1980-81.

TABLE 11

Historical Summary
Capital Funding for Universities, Ryerson, OCA, 1944-64 to 1981-82 ($000)

	OUCAC Debentures[4]	Capital Grants[1]	Minor Repairs & Maintenance	Health Sciences[2]	Min. of Energy	Wintario Grants[3]	Total
1944-64		83,448					83,448
1964-65	45,600						45,600
1965-66	89,239						89,239
1966-67	93,105						93,105
1967-68	99,995						99,995
1968-69	132,974						132,974
1969-70	101,619			7,634			109,253
1970-71	111,760			28,045			139,805
1971-72	114,739			21,308			136,047
1972-73	89,162			9,550			98,712
1973-74	46,254			8,238			54,492
1974-75	17,398			4,244			21,642
1975-76	16,236		2,746	4,176	435		23,593
1976-77	11,190		4,086	5,330	115	985	21,706
1977-78	18,250		5,800[1]	7,693	146		31,889
1978-79		15,247		2,076	178		17,501
1979-80		13,445		5,107	45	930	19,527
1980-81		13,500		4,924	50	2,170	20,644
1981-82		13,500		5,500+	—		19,000
TOTAL	1,126,661		12,632	113,825	969	4,085	1,258,172

(1) Amount added to operating grant base in 1979-80.

(2) Excludes bridge financing grants, but includes $804,000 for biohazard containment in 1979-80.

(3) Amounts committed in the year shown.

(4) Capital projects funded by debentures issued by the Government of Ontario.

Source: Ministry of Colleges and Universities

TABLE 12

Annual OCUA Recommendation for New Capital Funding for Major Repairs, Renovations and Replacement Projects and Government Allocation of Capital Grants, 1976-77 to 1981-82 ($000)

	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82
(A) GRANTS FOR WHICH OCUA MAKES RECOMMENDATIONS:						
OCUA Recommendation for Funding of New Major Repairs, Renovations and Replacement Projects (Excluding Carry-Overs and New Construction)	11,800.0	14,100.0	14,500.0	17,900.0	19,100.0	21,200.0
(B) GOVERNMENT GRANTS IN RESPONSE TO THE OCUA RECOMMENDATIONS:						
1. Major Renovations and Repairs						
New Starts	6,182.0	6,533.8	5,326.0	850.0	4,661.9	6,305.0
(Shortfall in Government New Capital Funding for Major Repairs and Renovations)	(5,618.0)	(7,566.2)	(9,174.0)	(17,050.0)	(14,438.1)	(14,895.0)
(C) GOVERNMENT GRANTS FOR WHICH OCUA DOES NOT MAKE RECOMMENDATIONS:						
1. Major Renovations and Repairs (continued)						
Carry-Overs	2,523.4	4,865.0	2,499.1	10,451.1	7,072.1	5,464.5
2. New Construction						
New Starts	2,208.0	411.7	2,118.0	—	50.0	—
Carry-Overs-	—	5,769.5	5,303.5	2,198.9	1,716.0	1,730.5
TOTAL	2,208.0	6,181.2	7,421.5	2,198.9	1,766.0	1,730.5
3. Land Purchases						
New Starts	—	609.0	—	—	—	—
Carry-Overs	276.6	—	—	—	—	—
TOTAL	276.6	609.0	—	—	—	—
TOTAL GOVERNMENT CAPITAL GRANTS[1]	11,190.0	18,189.0	15,246.6	13,500.0	13,500.0	13,500.0

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[1] Sum of "New Starts" in Section (B) and "New Starts" and "Carry-Overs" in Section (C).

Source: Ministry of Colleges and Universities.

TABLE 13

Formula Operating Grants ($000)

	Base Years (1974-77)	1977-78 (Actual)	1978-79 (Actual)	1979-80 (Actual)	1980-81 (Actual)	1981-82 (Interim)	Total (1977-82)
Brock	25,754	11,130	11,957	12,591	13,390	14,852	63,920
Carleton	84,806	36,063	38,353	39,786	42,255	45,942	202,399
Guelph	101,853	42,956	46,116	48,218	51,244	55,553	244,087
Lakehead	24,615	10,212	11,017	11,765	12,474	13,579	59,047
Laurentian	22,680	9,815	10,539	11,152	12,022	13,004	56,532
Algoma	2,722	1,014	1,043	1,061	1,065	1,098	5,281
Nipissing	2,696	1,393	1,585	1,644	1,698	1,840	8,160
Hearst	731	278	274	283	289	301	1,425
McMaster	112,241	47,135	50,566	52,468	56,116	60,878	267,163
Ottawa	126,454	52,926	56,687	59,501	64,433	71,213	304,760
Queen's	113,624	47,027	50,464	53,599	57,799	63,217	272,106
Toronto	379,085	153,437	163,063	171,833	185,825	205,656	879,814
Trent	15,413	6,736	7,349	7,701	8,216	8,844	38,846
Waterloo	125,873	52,763	56,641	59,681	63,898	70,175	303,158
Western	171,875	70,721	75,117	78,939	84,311	92,742	401,830
Wilfrid Laurier	28,909	12,263	13,276	14,067	15,274	17,134	72,014
Windsor	68,972	30,662	33,292	34,195	35,327	38,802	172,278
York	127,938	53,380	56,776	59,205	62,883	70,000	302,244
Ryerson	65,698	27,422	31,034	32,896	36,724	40,422	168,498
OISE	23,246	9,831	10,406	11,275	12,215	13,357	57,084
OCA	8,568	3,840	4,295	4,679	5,140	5,676	23,630
TOTAL	1,634,753	681,004	729,850	766,539	822,598	904,285	3,904,276

Source: Ministry of Colleges and Universities

TABLE 14

Enrolment Driven Funding: Difference Between Actual Grants and Hypothetical Grants Based on Slip-Year Formula Basis

($000)

	1977-78		1978-79		1979-80		1980-81		1981-82		TOTAL	
	$	%	$	%	$	%	$	%	$	%	$	%
Brock	214	1.9	113	0.9	- 616	- 4.9	- 156	- 1.7	1,037	7.0	592	0.9
Carleton	- 34	- 0.1	- 762	- 2.0	- 983	- 2.5	-1,025	- 2.4	-2,910	- 6.3	-5,714	- 2.8
Guelph	171	0.4	977	2.1	-1,152	- 2.4	-1,409	- 2.7	-2,387	- 4.3	-3,800	- 1.6
Lakehead	174	1.7	725	6.6	132	1.1	- 712	- 5.7	- 314	- 2.3	5	0.0
Laurentian	126	1.3	- 4	- 0.0	216	1.9	- 48	- 0.4	- 885	- 6.8	- 595	- 1.1
Algoma	- 139	-13.7	- 120	-11.5	- 226	-21.3	- 319	-30.0	- 121	-11.2	- 925	-17.5
Nipissing	231	16.6	141	8.9	- 286	-17.4	- 47	- 2.8	525	28.5	564	6.9
Hearst	- 40	-14.4	- 82	-29.9	- 10	- 3.5	- 92	-31.8	- 137	-45.5	- 361	-25.3
McMaster	- 578	- 1.2	- 577	- 1.1	- 511	- 1.0	-1,716	- 3.1	-3,349	- 5.5	-6,731	- 2.5
Ottawa	103	0.2	- 832	- 1.5	1,428	2.4	2,728	4.2	1,045	1.5	4,472	1.5
Queen's	589	1.3	1,389	2.8	732	1.4	847	1.5	792	1.3	4,349	1.6
Toronto	-2,520	- 1.6	-2,655	- 1.6	3,708	2.2	3,920	2.1	198	0.1	2,651	0.3
Trent	143	2.1	407	5.5	- 111	- 1.4	- 172	- 2.1	- 239	- 2.7	28	0.1
Waterloo	813	1.5	566	1.0	169	0.3	55	0.1	- 955	- 1.1	648	0.2
Western	- 984	- 1.4	- 212	- 0.3	-1,868	- 2.4	-1,917	- 2.3	1,450	1.6	-3,531	- 0.9
Wilfrid Laurier	105	0.9	419	3.2	587	4.7	1,043	6.8	1,806	10.5	3,960	5.5
Windsor	1,595	5.2	786	2.4	-2,794	- 8.2	-2,644	- 7.5	-1,988	- 5.1	-5,045	- 2.9
York	251	0.5	-1,134	- 2.0	-1,641	- 2.8	- 536	- 0.9	2,211	3.2	- 849	- 0.3
Ryerson	-1,161	- 4.3	- 926	- 3.0	1,487	4.5	279	0.8	2,203	5.5	1,881	1.1
OISE	521	5.3	1,265	12.7	1,237	11.0	1,213	9.9	1,395	10.4	5,631	9.9
OCA	420	10.9	516	12.0	502	10.7	708	13.8	623	11.0	2,769	11.7

Notes:

(1) Percentage figures represent the values above or below (-) actual grants as a percentage of actual grants.

(2) Positive figures imply that the institution would have received a greater level of grants under this slip-year enrolment driven formula than the institution actually received.

(3) The 1981-82 calculations do not take into account foreign fee adjustments.

TABLE 15

Fixed Share Funding: Difference Between Actual Grants and Hypothetical Fixed Share Funding Based on Percentage Share of Base Years' Grants

($000)

	1977-78		1978-79		1979-80		1980-81		1981-82		TOTAL	
	$	%	$	%	$	%	$	%	$	%	$	%
Brock	- 404	- 3.6	- 462	- 3.9	- 518	- 4.1	- 434	- 3.2	- 610	- 4.1	-2,427	- 3.8
Carleton	- 733	- 2.0	- 488	- 1.3	- 18	- 0.0	421	1.0	972	2.1	154	0.1
Guelph	- 529	- 1.2	- 646	- 1.4	- 463	- 1.0	4	0.0	784	1.4	- 850	- 0.3
Lakehead	44	0.4	- 25	- 0.2	- 221	- 1.9	- 86	- 0.7	40	0.3	- 248	- 0.4
Laurentian	- 370	- 3.8	- 416	- 3.9	- 520	- 4.7	- 612	- 5.1	- 462	- 3.6	-2,380	- 4.2
Algoma	123	12.1	176	16.9	219	20.6	309	29.0	412	37.5	1,239	23.5
Nipissing	- 269	-19.3	- 381	-24.0	- 379	-23.1	- 341	-20.1	- 348	-18.9	-1,718	-21.1
Hearst	28	10.1	54	19.7	62	21.9	81	28.0	160	35.2	331	23.2
McMaster	- 377	- 0.8	- 454	- 0.9	163	0.3	364	0.6	1,210	2.0	906	0.3
Ottawa	- 250	- 0.5	- 233	- 0.4	- 209	- 0.4	- 805	- 1.2	-1,267	- 1.8	-2,764	- 0.9
Queen's	310	0.7	268	0.5	- 317	- 0.6	- 620	- 1.1	- 360	- 0.6	- 719	- 0.3
Toronto	4,481	2.9	6,182	3.8	5,920	3.4	4,927	2.7	4,039	2.0	25,549	2.9
Trent	- 314	- 4.7	- 467	- 6.4	- 472	- 6.1	- 459	- 5.6	- 317	- 3.6	-2,029	- 5.2
Waterloo	90	0.2	3	0.0	- 190	- 0.3	- 56	- 0.1	7	0.0	- 146	- 0.0
Western	880	1.2	1,619	2.1	1,655	2.1	2,177	2.6	2,335	2.5	8,666	2.2
Wilfrid Laurier	- 223	1.8	- 372	- 2.8	- 515	- 3.7	- 730	- 4.8	-1,146	- 6.7	-2,986	- 4.0
Windsor	-1,930	- 6.3	-2,500	- 7.5	-1,855	- 5.4	- 622	- 1.8	- 650	- 1.7	-7,557	- 4.4
York	- 85	- 0.2	342	0.6	784	1.3	1,494	2.4	769	1.1	3,304	1.1
Ryerson	- 53	- 0.2	-1,701	- 5.5	-2,089	- 6.4	-3,664	-10.0	-4,079	10.1	-11,586	- 6.9
OISE	- 147	- 1.5	- 28	- 0.3	- 375	- 3.3	- 518	- 4.2	- 498	- 3.7	-1,566	- 2.7
OCA	- 272	- 7.1	- 471	-11.0	- 662	-14.1	- 830	-16.1	- 938	16.5	-3,173	-13.4

Notes:

(1) Percentage figures represent the values above or below (-) actual grants as a percentage of actual grants.

(2) Positive figures imply that the institution would have received a greater level of grants under this fixed share funding scheme than the institution actually received.

Council's Advisory Memoranda

81-1 The Ontario Graduate Scholarship Program, 1982-83

In this memorandum Council advises on the value of the Ontario Graduate Scholarship stipend and the number of awards.

Scholarship Eligibility
Since 1979-80, the eligibility rules for the Ontario Graduate Scholarship program have been such as to permit candidates who have held landed immigrant status for at least one year prior to the application date to compete with Canadian citizens for the open awards. In Advisory Memorandum 80-I, Council pointed out that, in the letter announcing this change, the Minister noted that "this is a very fair approach and one which should become a permanent feature of the program".

The OGS residency requirement is consistent with the requirements for the Social Sciences and Humanities Research Council (SSHRC) doctoral fellowships but more restrictive than the requirements for the Natural Sciences and Engineering Research Council (NSERC) postgraduate scholarships. Council is not recommending any changes to the OGS residency requirement for landed immigrants for 1982-83.

Scholarship Stipend
In a letter dated March 23, 1981 the Minister announced that the value of the stipend for 1981-82 would increase to $1,900 per term from $1,630 per term for 1980-81. This represents a 16.6% increase in the value of the award. At the same time, the Minister announced that the limit on other academic awards that could be held with the OGS would increase from $1,000 to $2,500.

Council welcomes this increase in the value of the award but regrets that the total dollars for the program will very likely be reduced in 1981-82, thus making it possible to award only 1,000 scholarships rather than the 1,200 given in 1980-81. Nonetheless, the Minister's decision regarding the value of the OGS stipend and the number of awards is clearly consistent with Council's position regarding the Ontario Graduate Scholarship Program.

Each year, Council has reaffirmed both its commitment to the OGS as a prestige award and its belief that the first priority should be assigned to the value of the award. This was stated in some detail in Advisory Memorandum 80-I. In that memorandum, Council also pointed out that while its position historically had not received unanimous support from within the university community, the report of the Chairman of the OGS Selection Board for 1980-81 indicated strong support for this view.

The 16.6% increase in the value of the stipend for 1981-82 serves to reverse part of the decline in the relative value of the scholarship that has occurred in past years. For 1981-82, the value of an NSERC award has been increased by 10% and the value of a SSHRC award has been increased by 11.5%. Because of these comparative increases, for 1981-82, the relative value of an OGS has increased to approximately 61% of the value of an NSERC award and 65% of the value of a SSHRC award from 58% and 62% respectively in 1980-81. However, the relative value of the OGS still does not compare favourably with 1974-75 when the OGS was approximately 76% of the value of an NSERC award and 85% of the value of a SSHRC award.

In Table I, Council updates its comparison of the values of the OGS, NSERC and SSHRC awards since 1974-75.

Table I

COMPARATIVE SCHOLARSHIP STIPENDS

	OGS	NSERC PGS Stipends[1]	SSHRC Stipends (1st & 2nd PhD)
1974-75	$3,400[2]	$4,500	$4,000
1975-76	$3,400[2]	$5,000	$5,000
1976-77	$3,750	$5,520	$5,500
1977-78	$4,350	$6,000	$6,000
1978-79	$4,500	$6,360	$6,360
1979-80	$4,800	$7,000	$6,750
1980-81	$4,890	$8,500	$7,860
1981-82	$5,700	$9,350	$8,760
% increase 1981-82 over 1974-75	67.6	107.8	119.0

1. NSERC scholarship values are those that were in effect in the Fall of each academic year.

2. Adjusted to take account of the integration of fees into the stipend in 1976-77.

In Advisory Memorandum 80-I, Council outlined the effects that inflation (as measured by the Consumer Price Index) has had on the real values of the OGS, NSERC and SSHRC awards. Table II updates the information provided last year. It incorporates revised inflation rates for the 1979-80 and 1980-81 fiscal years and an estimate for 1981-82. The table shows that the 16.6% increase in the value of the OGS stipend for 1981-82 results in an increase in the real value of the award over 1980-81. However, the 1981-82 value of the award in 1974-75 dollars is still 11.4% below the 1974-75 value. In comparison, the real values of the NSERC and SSHRC awards for 1981-82 are, respectively, 9.8% and 15.7% higher than their 1974-75 values.

Table II

COMPARATIVE SCHOLARSHIP STIPENDS
(In Constant Dollars 1974-75 100.0)

	OGS	NSERC PGS Stipends	SSSHRC Stipends (1st & 2nd PhD)
1974-75	$3,400	$4,500	$4,000
1975-76	$3,091	$4,545	$4,545
1976-77	$3,191	$4,698	$4,681
1977-78	$3,409	$4,702	$4,702
1978-79	$3,233	$4,569	$4,569
1979-80	$3,158	$4,605	$4,441
1980-81	$2,893	$5,030	$4,651
1981-82	$3,011	$4,939	$4,628
% change 1981-82 over 1974-75	-11.4	+9.8	+15.7

In determining the value of the OGS stipend that it intends to recommend for 1982-83, Council has taken all of the above into consideration. In addition, it is likely that the values of the federal awards will increase again in 1982-83. Council has also noted that in his report, the Chairman of the OGS Selection Board for 1981-82 states that:

> The Board urges the Ministry most strongly to restore the number of awards to 1200 as soon as possible, at the same time maintaining the real value of the awards. Only under these circumstances can this program serve as an effective incentive and encouragement to the best students in Ontario.

Council remains committed to the Ontario Graduate Scholarship as a prestige award and continues to assign first priority to the value of the award. It is imperative for Ontario to contribute significantly to the support of high quality graduate students. Council therefore believes that the stipend value should be increased to $6,300 for 1982-83. This represents approximately an 11% increase over the 1981-82 stipend value. Council must point out that, given expected inflation rates, this increase would serve only to maintain the real value of the award at approximately the 1981-82 value. Accordingly, Council *recommends to the Minister:*

OCUA 81-1
ONTARIO GRADUATE SCHOLARSHIP STIPENDS, 1982-83

THAT Ontario Graduate Scholarships carry a minimum stipend of $6,300, or $2,100 per term, in 1982-83.

Numbers of Awards

Table III updates the information provided in Advisory Memorandum 80-I regarding the number and distribution of OGS awards by category since 1974-75.

Table III

NUMBER OF OGS AWARDS (by category)

	Open	Institutional	Visa/LI	Total
1974-75	850	150	(Quota)*	1,000
1975-76	850	150	(Quota)*	1,000
1976-77	850	150	(Quota)*	1,000
1977-78	850	45	50	945
1978-79	1,150	45	50	1,200
1979-80	1,095	45	60	1,200
1980-81	1,095	45	60	1,200
1981-82	910	40	50	1,000

* Up to 10% of the awards could be allocated to landed immigrants or holders of student visas.

In each of the four years preceding 1981-82, 45 institutional awards (9 per university) were reserved for universities which offer no doctoral programs. Given the reduction in the total number of OGS awards for 1981-82, only 40 awards (8 per university) were reserved for this purpose. Council continues to support the category of institutional awards and, for 1982-83, accordingly *recommends to the Minister:*

> *OCUA 81-2*
> *INSTITUTIONAL AWARDS TO UNIVERSITIES WITHOUT DOCTORAL PROGRAMS*
>
> *THAT* up to 45 scholarships (9 per university) be institutional awards in 1982-83 for the universities having no doctoral programs.

Since 1977-78, a certain number of awards has been reserved for "recent" landed immigrants and persons on student visas. In each of 1977-78 and 1978-79, 50 awards were made available and in 1979-80 the number was increased to 60. For 1981-82, however, the number of awards reserved for this category of the competition was reduced to 50. Council supports the continuation of this category of scholarships for 1982-83 and accordingly *recommends to the Minister:*

OCUA 81-3
ONTARIO GRADUATE SCHOLARSHIPS TO RECENT LANDED IMMIGRANTS AND PERSONS ON STUDENT VISAS

THAT up to 60 scholarships be reserved for persons who, at the time of application, are either student visa holders or have held landed immigrant status for less than one year.

At a stipend level of $6,300, OGS funding would have to increase by approximately 11% to maintain the total number of awards at 1,000 and by approximately 33% in order to restore the number of awards to 1,200. Council views an 11% increase as the absolute minimum that is necessary to support the Ontario Graduate Scholarship Program. Given a stipend value of $6,300, Table IV shows the number of awards, by category, which would be available in a range of funding increases from 11% to 33%. In view of all of the above considerations, Council requests that, for 1982-83, the increase in funding for the Ontario Graduate Scholarship Program be within the percentage range shown in Table IV. Council accordingly *recommends to the Minister:*

OCUA 81-4
NUMBER OF ONTARIO GRADUATE SCHOLARSHIP AWARDS IN 1982-83

THAT consistent with the priority attached by Council to a 1982-83 stipend of $6,300, the numbers of Ontario Graduate Scholarships available for:

(a) open competition,

(b) institutional awards at universities having no doctoral programs, and,

(c) visa students and recent landed immigrants

be determined in the manner illustrated in Table IV of this memorandum.

W.C. Winegard
Chairman
May 29, 1981

Table IV

NUMBER AND COMPOSITION OF OGS AWARDS FOR 1982-83 UNDER ALTERNATIVE FUNDING INCREASES

Percent Increases in Funding for 1982-83 over 1981-82 (%)	Total Awards Possible at a Stipend of $2,100 per term[1] (No.)	Awards Available for Open Competition (No.)	Awards Available for Visa Students and Recent Landed Immigrants (No.)	Institutional Awards for Equal Distribution by Quota among Universities with no Doctoral Programs (No.)
11[2]	1,004	914	50	40
12	1,013	922	51	40
13	1,022	931	51	40
14	1,031	939	52	40
15	1,040	948	52	40
16	1,050	957	53	40
17	1,059	966	53	40
18	1,068	970	53	45
19	1,077	978	54	45
20	1,086	987	54	45
21	1,095	995	55	45
22	1,104	1,004	55	45
23	1,113	1,012	56	45
24	1,122	1,021	56	45
25	1,131	1,029	57	45
26	1,140	1,038	57	45
27	1,149	1,047	57	45
28	1,158	1,055	58	45
29	1,167	1,064	58	45
30	1,176	1,072	59	45
31	1,185	1,081	59	45
32	1,194	1,089	60	45
33	1,203	1,098	60	45

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[1] Assuming that there is no change in the mix of three-term and two-term awards.

[2] The recommended stipend of $6,300 for 1982-83 is approximately 11% greater than the stipend for 1981-82. Therefore the OGS funding for 1982-83 would have to increase by approximately 11% to maintain the number of awards at 1,000, assuming that there is no change in the mix of three-term and two-term awards.

81-II Government Support for the University System in 1982-83

Council tenders its 1982-83 funding advice in a period when Ontario universities are experiencing increasing financial pressures. In *A Financial Analysis of the Ontario University System - 1980*, Council expressed deep concern over the ability of Ontario institutions to meet the goals of the Ontario university system when faced with such severe financial constraints. Its concerns have not abated. Indeed, there have been telling signs during the past year that Council's apprehensions are shared by Government, as evidenced by the establishment of the Committee on the Future Role of Universities in Ontario.

GOVERNMENT SUPPORT IN PERSPECTIVE

The increase in university operating grants for 1981-82 is an improvement over the increases experienced in recent years. However, total funds available to the Ontario university system still fall short of meeting its basic financial needs.

In Advisory Memorandum 80-VI, Council estimated that Government support of the Ontario university system would fall about $22 million short of meeting Council's basic funding objectives for 1981-82. This estimate was based on the inflation and enrolment change factors used in calculating the original funding recommendation. It is apparent that these factors were too low. When revised factors are incorporated into Council's funding model, as detailed in Appendix A, the university system's revenue for 1981-82 will be at least $44.0 million short of the funds required.[1]

BASIC FUNDING OBJECTIVES FOR 1982-83

The funding objectives to which Council has subscribed for the past few years have been retained for 1982-83. These objectives are: (1) to offset inflationary trends, (2) to maintain levels of service commensurate with changes in enrolment, and (3) to adjust for predicted enrolment change.

The Cost of Council's Basic Funding Objectives for 1982-83

The method for costing Council's basic funding objectives differs little from the approach followed in recent years. The methodology and factors used to calculate the funds required are outlined below. Table I documents the results of the calculations.

Column 1: The 1981-82 Base - The base employed in Council's funding model is an estimate of university system expenditures in 1981-82. In calculating this base,[2] it is assumed that expenditures in 1981-82 are equal to estimated system revenues. As a result, the base does not incorporate the unmet funding needs identified above.

The treatment of "other income" in the 1981-82 estimate of system revenues differs slightly from that followed by Council in past years. Two revenue categories, (1) municipal tax grants, and (2) gifts, donations and non-government grants, are excluded from the estimate of total system revenue. Municipal tax grants are eliminated from the base in recognition of the fact that this income goes directly to the municipalities, with the universities acting only as intermediaries in the transfer process. The exclusion from the base of income from gifts, donations and non-government grants, reflects Council's belief that the inclusion of income from these sources in a formula designed to determine the level of Government operating grants may have a deterrent effect on the level of gifts, donations and non-government grants received by the universities.

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[1] In accordance with the Minister's acceptance of OCUA 79-12, revenue received from additional optional fees is not taken into consideration in this memorandum.

[2] A detailed description of the derivation of this base is given in Appendix B.

The base expenditures include those of the fifteen provincially-assisted universities, the affiliated colleges, Ryerson Polytechnical Institute, the Ontario Institute for Studies in Education, the Ontario College of Art and Dominican College. Total eligible university operating revenues and expenditures are estimated to equal $1,170.1 million in 1981-82. These expenditures are distributed between the expenditure categories (salaries and fringe benefits, and non-salary items) according to their corresponding share in the universities' budgets.

Column 2: Inflationary Trend Costs - In order to determine the inflation factor to be used for 1982-83, Council is again selecting the low end of several forecasts of increases in the Consumer Price Index (CPI) made by competent authorities. As a result, a salary and fringe benefits inflation factor of 11.0% has been incorporated in Council's funding calculation.

For several years, price increases in universities' non-salary items have exceeded increases in the CPI. Over the period 1973-74 to 1979-80, the annual percentage change in the Ontario Universities Non-Salary Price Index (OUNSPI) averaged 32.2% higher than the annual percentage change in the CPI. Thus, Council's non-salary inflation factor is 14.5%, derived by increasing the 11.0% salary inflation factor by the average differential between increases in the OUNSPI and the CPI for the period identified above.

Column 3: Service Level Costs - Council's advice continues to include a provision for maintaining levels of service. The major component of the cost of maintaining these levels is a consequence of the uneven age distribution of the faculty complement which in turn generates a net cost in providing for progress through the ranks (PTR). The Council of Ontario Universities recently developed a faculty manpower flow model to estimate these costs. This model predicts that the present university faculty age distribution will generate a net cost of providing for progress through the ranks for 1982-83 of 1.9%. Council realizes that this model does not include the PTR costs associated with non-faculty staff. It is Council's intention to ask the Council of Ontario Universities to undertake a review of non-faculty PTR costs during the forthcoming year. Despite a lack of information on the PTR costs of non-faculty staff, Council applied in Column 3 the 1.9% factor to the total salary and fringe benefit expenditures.

Column 4: Efficiency/Rationalization Factor - Council recognizes that the university system feels that the inclusion of the efficiency/rationalization factor in the funding model is inappropriate during a period of severe underfunding. However, Council remains convinced that the principle of searching for ways of increasing efficiency and promoting rationalization must continue to be pursued by the university system. In recognition of the level of underfunding experienced by the university system in recent years, Council reduced the value of the efficiency/rationalization factor from-0.7% to -0.5% in its 1981-82 advice. Council has decided to apply the same factor, -0.5%, for 1982-83.

Column 5: Predicted Enrolment Change - Total university enrolment increased by about 3.0% in 1980-81. This increase was characterized by enrolment increases at all levels of study, and a particularly large increase in first-year enrolment. COU's Committee on Enrolment Statistics and Projections estimates that total university enrolment will increase by over 3% in 1981-82. Council has reviewed this forecast, the available data concerning the number of applications and applicants for first-year entry in the Fall of 1981, retention rates and the associated potential enrolment increases in upper years in 1982-83, and recent projections of 1982 Secondary School Honours Graduation Diploma recipients. After taking these many factors into consideration, Council estimates that enrolment will increase by 2.0% in 1982-83. It is this factor which Council adopts for Column 5 of its funding model.

Column 6: Stabilization Factor - Council continues to apply the principle of stabilization in funding with respect to enrolment change, regardless of the direction of the change in enrolment. As a result, Council again applies a 50% discount factor to the predicted

Table I

The Cost of Basic Funding Objectives for 1982-83
($ million)

	1	2	3	4	5	6	7
	1981-82 Base	Inflationary Trend Costs	Service Level Costs	Efficiency/ Rationalization Factor	Predicted Enrolment Change	Stabilization Factor	Cost of Basic Objectives for 1982-83
Expenditures							
Salaries and Fringe Benefits	944.3	103.9	19.9	-5.3	21.3	-10.7	1,073.4
Non-Salary	225.8	32.7	0.0	-1.3	5.1	-2.6	259.7
Total	1,170.1	136.6	19.9	-6.6	26.4	-13.3	1,333.1

Notes:

1. Percentage change factors are as follows: Column 2: 11.0%, 14.5%; Column 3: 1.9%, 0.0%; Column 4: -0.5%; Column 5: 2.0%; Column 6: -50% of Column 5
2. These factors, except for column 6, are applied to the cumulative total of the previous columns.

1982-83 enrolment increase of 2.0%. In Column 6, 50% of the amount added in Column 5 has been subtracted.

Column 7: Cost of Basic Funding Objectives - The total cost of the basic funding objectives in Column 7 of Table I is the sum of the first six columns in the table. Council estimates that the total cost of the basic funding objectives for 1982-83 is $1,333.1 million, representing a 13.9% increase over the 1981-82 base.

The Cost to Government of Meeting Council's Basic Funding Objectives

Table II shows the estimated funds required from other revenue, other fee revenue, formula fee revenue and Government operating grants in order to meet Council's basic funding objectives. It assumes that other revenue will remain at the predicted 1981-82 level of $59.9 million[3] and that other fee revenue will equal $13.7 million. The latter is the 1981-82 level of other fee revenue adjusted for the predicted 2.0% increase in enrolment. Subtracting these items from the Cost of Basic Objectives of $1,333.1 million, leaves $1,259.5 million to be met by formula fees and Government operating grants.

Table II

Cost to Government of Meeting Council's Basic Funding Objectives for 1982-83:
Provincially-Assisted Universities,
Affiliated Colleges, Ryerson, OISE, OCA
and Dominican College
($ million)

1.	Cost of Basic Funding Objectives	1,333.1	
2.	Other Revenue	(59.9)	
3.	Other Fee Revenue	(13.7)	
4.	Total Formula Fees and Government Operating Grants required to meet Council's Basic Funding Objectives	1,259.5	
5.	Formula Fee Revenue at 1981-82 rates and the predicted 1982-83 level of enrolment	182.6	
6.	1981-82 Operating Grants	917.9	
7.	1981-82 Operating Grants and enrolment-adjusted Formula Fee Revenue (line 5 + line 6)	1,100.5	
8.	Percentage increase in Operating Grants and Formula Fee Revenue $\left(\frac{\text{line 4 - line 7}}{\text{line 7}} \times 100\right)$		14.4%
9.	Additional Formula Fee Revenue generated by a 14.4% increase in formula fee rates	26.4	
10.	Total Formula Fee Revenue (line 5 + line 9)	209.0	
11.	Cost to Government of Basic Funding Objectives (line 6 increased by 14.4%)	1,050.5	

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[3] As predicted in Appendix B.

Of the above $1,259.5 million, $182.6 million are expected to accrue to the university system from formula fees at 1981-82 rates, adjusted for the predicted 2% increase in enrolment. Consistent with Council's advice on formula fee rates in Advisory Memorandum 79-IV, it is assumed that formula fee rates will increase by the same percentage as operating grants. Therefore, both formula fee rates and Government formula and non-formula grants must increase by 14.4%, yielding $1,050.5 million in operating grants, $26.4 million in additional formula fee revenue and total formula fee revenue of $209.0 million ($182.6 million + $26.4 million).

Accordingly, Council *recommends to the Minister and Lieutenant-Governor in Council:*

OCUA 81-5

GOVERNMENT OPERATING GRANTS FOR 1982-83 TO MEET THE COST OF COUNCIL'S BASIC OBJECTIVES IN FUNDING THE OPERATION OF PROVINCIALLY-ASSISTED UNIVERSITIES AND THEIR AFFILIATED COLLEGES, RYERSON POLYTECHNICAL INSTITUTE, THE ONTARIO INSTITUTE FOR STUDIES IN EDUCATION, THE ONTARIO COLLEGE OF ART AND DOMINICAN COLLEGE

THAT $1,050.5 million in operating grants be made available in 1982-83 to the provincially-assisted universities and their affiliated colleges, Ryerson Polytechnical Institute, the Ontario Institute for Studies in Education, the Ontario College of Art and Dominican College.

OCUA 81-6

FORMULA FEE RATES FOR 1982-83 TO MEET THE COST OF COUNCIL'S BASIC OBJECTIVES

THAT formula fee rates for 1982-83 be increased by the same percentage as operating grants, namely 14.4%, to provide $209.0 million in formula fee revenue to the provincially-assisted universities and their affiliated colleges, Ryerson Polytechnical Institute, the Ontario Institute for Studies in Education, the Ontario College of Art and Dominican College, and that this increase in formula fee rates be fully reflected in the Ontario Student Assistance Program.

SPECIAL INSTITUTIONAL AND POLICY MATTERS

As in previous years, special institutional and policy matters are excluded from Council's basic funding exercise. For the past three years, Council's recommendations covered the annual grant-in-aid to the Bar Admission Course of the Law Society of Upper Canada, and the final instalment required to align bilingualism grants with the incremental costs, as documented by Council, of existing programs and activities. Government has not yet accepted Council's recommendations for the remaining portion of the incremental costs of existing bilingualism programs.

Council remains convinced of the need to fund the documented incremental costs of existing bilingualism activities. With this in mind, Council's funding recommendation for special institutional and policy matters again includes a provision to cover the outstanding portion of the incremental costs of existing bilingualism activities. Council also includes a provision for the grant-in-aid to the Bar Admission Course. Accordingly, Council *recommends to the Minister and Lieutenant-Governor in Council:*

OCUA 81-7
FUNDING FOR 1982-83 FOR EXISTING BILINGUALISM PROGRAMS AND THE BAR ADMISSION COURSE

> *THAT* $1.2 million be provided in 1982-83 for the remaining portion of the documented incremental costs of existing bilingualism programs, and for a grant-in-aid for the Bar Admission Course.

Equipment and Library Needs

Council's concerns about the effects of sustained underfunding on the universities' equipment and library acquisitions have heightened since Council last tendered its advice. In Council's Fall 1980 financial paper, *A Financial Analysis of the Ontario University System - 1980*, Council found evidence of continued deterioration in the equipment and library resources held by Ontario universities. Since then, the Committee on the Future Role of Universities in Ontario has also expressed concern over the state of Ontario universities' equipment and libraries. In its preliminary report, the Committee stated:

> The stock of research equipment acquired in the 1960's as part of the capital expansion is rapidly becoming worn or obsolete. Although no accurate estimate can be made of replacement costs, the maintenance of "state of the art" research capability could require $25 million annually over and above the current levels of expenditure. Library holdings are also in need of replenishing, since the sums allocated annually for this purpose are well below the rate of inflation.[4]

In this light, past Council recommendations concerning additional funding for equipment and library acquisitions appear to be quite modest. Council continues to assert the need for additional funding for equipment and library acquisitions. This assertion now draws a measure of support from Government's stated goals. The Government announced earlier this year that "additional funding will be provided to purchase modern research equipment for engineering and science in Ontario universities".[5]

Accordingly, Council ***recommends to the Minister and Lieutenant Governor in Council:***

OCUA 81-8
EQUIPMENT AND LIBRARY FUNDING FOR 1982-83

> *THAT* in addition to the amounts recommended in 81-5, 81-6 and 81-7, $10.0 million be provided in 1982-83 in recognition of the special need for equipment and library acquisitions.

CAPITAL ASSISTANCE

In Advisory Memorandum 80-II, Council recommended that $21.2 million be provided in 1981-82 for new major repairs, renovations and replacement projects. Only $6.3 million were made available for these purposes. Council reiterates the concerns it has expressed in past years over the long-term effects of continued capital underfunding. Such underfunding will make it necessary to provide larger outlays of capital assistance in the future. This will be more costly over the long-term than the annual provision of a reasonable level of funds.

Council continues to use a level of 1% of the value of the space inventory in the university system as the minimum necessary annually for new major repairs, renovations and replacement projects. For 1982-83, the value of this space inventory has been adjusted for inflation by increasing last year's recommendation for capital assistance by 8.9%, the most recent annual change in the Non-Residential Building Construction Price Index (1979 to 1980).

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[4] Committee on the Future Role of Universities in Ontario, *The Challenge of the '80s*, March 1981, Vol. I, p. 15.

[5] *Building Ontario in the 1980's*, January 27, 1981, p. 38.

Accordingly, Council *recommends to the Minister and to the Lieutenant-Governor in Council:*

> *OCUA 81-9*
> *LEVEL OF SUPPORT FOR MAJOR REPAIRS, RENOVATIONS AND REPLACEMENT PROJECTS IN 1982-83*
>
> *THAT* funds for capital assistance in 1982-83 be $23.1 million for major repairs, renovations and replacement projects, plus any amount necessitated by carry-overs and essential new construction.

CONCLUSION

Although the funding was increased in 1981-82, the increase fell short of that recommended by Council. The shortfall between university system revenues and needs continues to accumulate. The Ontario university system represents a major resource developed over the decades for the benefit of the people of Ontario. The funds recommended in this memorandum are the minimum required to preserve this resource.

W.C. Winegard
Chairman
May 29, 1981

Appendix A to Advisory Memorandum 81-II

This appendix outlines the derivation of the 1981-82 revised shortfall calculation. The original shortfall estimate found in Advisory Memorandum 80-VI has been revised to reflect current projections of inflation and enrolment change. The salaries and fringe benefits inflation factor has been increased to 12.0% from the 9.5% figure used when the advice was first given. The 11.7% non-salary inflation factor found in Advisory Memorandum 80-II has been replaced by a 14.8% figure. Recent enrolment projections for 1981-82 suggest that enrolment will increase by 3.0% rather than by the previously projected 1.0%. When applied to the original base, these updated factors yield a figure for the cost of Council's basic funding objectives of $1,228.9 million.

Council's estimate of the total funds available to the Ontario university system in 1981-82 has also been revised to reflect more accurately the level of Government grants, fee income, and other revenue to be received. Government made available $917.9 million in operating grants to cover Council's 1981-82 basic funding objectives. This figure does not include the $0.6 million used for the grant-in-aid to the Bar Admission Course. Taking into account the projected enrolment increase of 3.0% and the formula fee rate increase of 10.0%, Council estimates that formula fee and other fee income will equal $192.3 million. Other revenue, including municipal tax grants, gifts, donations and non-government grants, is estimated to be $74.7 million. These revised estimates imply that the revised figure for total revenue available to the system is equal to $1,184.9 million.

Council estimates that university revenues for 1981-82 will be $44.0 million ($1,228.9 million - $1,184.9 million) less than that required to meet its revised basic funding objectives.

Appendix B to Advisory Memorandum 81-II

This appendix outlines the derivation of the 1981-82 base used in Council's funding exercise. For the purpose of the exercise, Council assumes that system expenditures in 1981-82 will equal total revenue, and estimates total operating revenue at $1,170.1 million. Table A-1 provides details of 1981-82 revenues by type.

Formula and Non-Formula Grants

Table A-1 indicates that formula and non-formula grants equal $917.9 million. This figure is derived by subtracting the $5.0 million retained by the Ministry of Colleges and Universities for line-item grants and the $0.6 million to be used for the grant-in-aid to the Bar Admission Course from the $923.5 million in operating grants announced by the Minister on January 21, 1981.

Formula Fees and Other Fees

Following last year's methodology, Council's funding base includes only that fee revenue which is derived from formula fees and other fees. Any revenues accruing to the universities as a result of the application of their discretionary tuition fee power have been excluded from the base. The $179.0 million for formula fee revenue used in the base is calculated by applying the 1981-82 formula fee rates to 1980-81 enrolment and adjusting for the predicted increase in enrolment for 1981-82 (a 3% increase in undergraduate enrolment and a 2.5% increase in graduate enrolment). This figure includes supplementary foreign fee revenue and third-term graduate formula fees. The other fee revenue of $13.3 million was calculated from the universities' budget reports for 1981-82.

Other Revenue

For 1981-82, the other revenue component of the funding base no longer includes revenue from municipal tax grants, gifts, donations and non-government grants. Other revenue includes Ministry line-item grants of $5.0 million and an estimated $54.9 million in other sources of revenue. The latter amount was derived from the universities' reports on budgeted revenues for 1981-82.

Table A-I

University System Revenues
1981-82 Estimate
($ millions)

Formula and Non-Formula Grants*	917.9
Formula Fees	179.0
Other Fees	13.3
Other Revenue**	59.9
Total	1,170.1

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* Excludes Ministry line-item grants and Bar Admission Course grant-in-aid.

** Includes Ministry line-item grants.

81-III Polytechnic Education in Ontario

In a letter dated September 22, 1980, addressed to the Chairman of Council, the Minister of Colleges and Universities noted that "For some time there has been widespread discussion about the definition, the nature and the role of polytechnic education in Ontario." In order to "clarify the framework and move to a more effective manpower planning strategy", the Ministry of Colleges and Universities (MCU) had financially assisted the completion of a study by Mr. A. Wilkinson (Dean of Community Services, Ryerson Polytechnical Institute) entitled *A Comparison of Polytechnical Education in England and Wales with Polytechnical Education in Ontario*. Also, MCU staff had prepared a "green paper" (entitled *Polytechnic Education in Ontario*), the purpose of which was "to provide information and stimulate discussion and response". The Minister went on to state that:

> Following a compilation and review of the responses, it is my intention to ask the Ontario Council on University Affairs for advice before moving to finalize a policy direction in this critical area of polytechnical education.

Consequently, on April 8, 1981, the Minister transmitted to Council copies of the briefs submitted in response to Polytechnic Education in Ontario and asked for "advice on the matters raised in the discussion paper and the briefs received".

Council has carefully reviewed the MCU Report and the sixteen responses submitted,[1] and is now prepared to provide comment upon certain prominent issues discussed in the report and some of the responses to those issues. It should be noted at the outset, however, that Council will be concentrating on those matters which pertain most directly to those institutions immediately within its purview. These matters are discussed under the following headings:

(a) Identifying Polytechnic Education,

(b) The Effects of Stratification,

(c) Creation of a Third Stratum,

(d) Consultation and Coordination, and

(e) Applied Research.

Identifying Polytechnic Education

In the MCU Report, an etymological approach is adopted which suggests that "polytechnic" education "denotes a broad, more or less comprehensive coverage of fields of study with the added dimension that this meaning combines theory and applications".[2] Using the polytechnics of England and Wales as a model, the Report compares their program offerings with the degree and diploma programs offered by the colleges and universities in Ontario,[3] and concludes that "The program coverage of Ontario post-secondary institutions is 'polytechnic' in breadth".[4]

Many of the respondents to the report indicated some dissatisfaction with the approach adopted, often for quite different reasons. The Council of Ontario Universities (COU), for example, suggested "that to adopt a precise definition of polytechnic education would be to limit the diverse and exciting programme possibilities which exist".[5] The President of

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[1] For a complete list of the individuals and organizations who submitted briefs, see Appendix A.

[2] MCU, *Polytechnic Education in Ontario*, p. 4.

[3] See Appendix A of the report.

[4] MCU, *op. cit.*, p. 11.

[5] COU, *Response to Polytechnic Education in Ontario*, p. 1.

Connestoga College, on the other hand, argued that "The question of whether the present system is 'sufficiently polytechnic' is unaddressable (without) a clear definition of polytechnic".[6] Ryerson Polytechnical Institute devoted an entire chapter to "The Position of Polytechnic Education" and suggested that, while there was a broad definition of polytechnic education, there were in fact distinctly different forms "distributed across the different post-secondary constituencies - universities, C.A.A.T.'s, Ryerson, Ontario College of Art and the agricultural colleges".[7]

Council, for its part, sees the need to establish, at least for purposes of discussion, an operational definition of polytechnic education and has itself posited, in Advisory Memorandum 80-IV, the following delineation:

> Polytechnical education, defined in its broadest sense, is concerned primarily with the application of knowledge and the training of individuals for specific vocational purposes. Some varying portion of each program of study may be devoted to education in the liberal arts and sciences. Similarly, there may be variations in terms of depth of study and degree of theoretical analysis. However, despite these differences, polytechnical programs share a vocational orientation.[8]

While not anticipating universal acceptance of its definition, Council has not seen anything in either the Ministry's Report or the responses, which would lead to any significant alteration. *On this basis, Council concurs with the judgement expressed in the report that program coverage in Ontario institutions is polytechnic in scope.*

Further, Council wishes to emphasize the observation contained in the report that "Even in the university system, there is a heavy commitment to professional and career-oriented study".[9] As the Committee on the Future Role of Universities in Ontario (CFRUO) has pointed out, "there are many disciplines that relate to work opportunities and that provide the underpinnings for entire industries".[10]

The suggestion put forward by the Ontario Association of Certified Engineering Technicians and Technologists (OACETT) that university programs , even in the field of engineering, are "10% skill" and "90% theory"[11] is not, in Council's view, an accurate description of the nature of these types of programs at the university level. Similarly, Council cannot accept Ryerson's statement that "university polytechnic programs have a dominant emphasis aimed at producing graduates for the creation of new knowledge, new products and new systems".[12] Practical, vocationally-oriented, polytechnic education is an integral part of many programs of study at the university level.

The Effects of Stratification

One of the more important questions asked by the MCU Report is "whether by layering post-secondary education into a 'college' stratum and a 'university' stratum, we are depriving students of opportunities to combine theoretical and practical studies".[13] The report then attempts to respond by examining three particular fields of study; Engineering and Engineering Technology, Business and Business-related Studies and Computing, Data Processing and Related Studies. It notes that a "middle or bridging stratum already exists at

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[6] Letter from Mr. K. E. Hunter to Dr. H. K. Fisher, January 6, 1981, p. 2.

[7] Ryerson Polytechnical Institute, *Report of the Ryerson Commission on Polytechnic Education*, p. 15.

[8] OCUA, *Seventh Annual Report*, p. 126.

[9] MCU, *op. cit.*, p. 11.

[10] CFRUO, *The Challenge of the '80s*, Vol. I, p. 11.

[11] OACETT, *Response to the Ministry of Colleges and Universities on "Polytechnic Education in Ontario"*, Figure 1.

[12] Ryerson, *op. cit.*, p. 17.

[13] MCU, *op. cit.*, p. 11.

Ryerson and Lakehead"[14] in the Engineering area, that the field of Business Studies has "multiple overlapping strata with possibilities for many different permutations and combinations of studies",[15] and that "we have in the (computing) industry a continuum of skills, and the supporting educational programs are also de facto continuous".[16] In each case, however, the report suggests that there is a possible need for expanded or strengthened "bridging" mechanisms.

The report then examines available data and surveys in order to determine if there are shortages of graduates in particular polytechnic fields of study. It utilizes the results of surveys conducted by Employment and Immigration Canada, the Ontario Manpower Commission, the federal Public Service Staff Relations Board, and the Economic Council of Canada. After consideration, the Report concludes that:

> ...most of the current shortages appear to be in the trades or skilled worker categories. In the professional and semi-professional occupations for which the universities, the polytechnics and CAAT post-secondary programs prepare people, most fields appear to be in a general demand/supply equilibrium. However, the surveys generally converge on a few areas where shortages exist, namely engineering, accounting and other business careers and computer-related occupations... If (such) needs are not met, the problem may be a function of limitations on institutional capacity rather than gaps in programming.[17]

The responses support, almost unanimously, the survey results and perceptions enunciated in the report concerning manpower needs. The Committee of Presidents of Colleges of Applied Arts and Technology states that "The Ontario Colleges...have a delivery system which presently meets the applied post-secondary needs of Ontario".[18] COU notes that "Ontario post-secondary programmes in business and business-related studies, in computing, data processing and related studies, and in the health sciences cover the range from theoretical to applied in varying degrees of breadth and depth".[19] In addition, seven of the eight college submissions specifically endorse the manpower needs identified. Ryerson, on the other hand, suggests that the MCU Report "bases its assessment of the province's polytechnic position vis-à-vis manpower requirements largely upon where we are now" and offers, as an alternative, certain speculated "medium term manpower needs".[20]

With almost equal unanimity, the responses agree that "It is possible that the reason for the shortages of tradesmen in the province of Ontario is that the colleges' mandate did not include apprenticeship training on the same basis as other post-secondary programs".[21] As the submission from Centennial College notes, "With the close industry interface enjoyed by the CAAT's they are in a unique position to rapidly supply skilled manpower in shortage areas, provided that the necessary educational/financial resources are made available to them".[22] Several submissions also mentioned the potential benefits of strengthened local advisory committees.

With respect to future manpower needs, Council recognizes that many colleges and universities have significant institutional capacity problems. At the same time, however, when certain manpower needs are clearly defined, both types of institutions will do their best to respond. The universities, for example, were able to accommodate an increase in full-time undergraduate degree enrolment in engineering from 10,944 students in 1975-76 to 13,241 students in 1980-81, an increase of 21%. Similarly, the universities accommodated a 123% increase in full-time undergraduate degree enrolment in commerce and business administration, from 6,061 students in 1975-76 to 13,500 students in 1980-81.[23]

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[14] *Ibid.*, p. 14.

[15] *Ibid.*, p. 22.

[16] *Ibid.*, p. 28.

[17] *Ibid.*, p. 37.

[18] Committee of Presidents, *Polytechnic Education in Ontario*, p. 5.

[19] COU, *op. cit.*, p. 3.

[20] Ryerson, *op. cit.*, p. 32-33. The eight projected needs are contained on pages 34 to 36.

[21] Committee of Presidents, *op. cit.*, p. 1.

[22] Centennial College, *Polytechnic Education in Ontario: Some Critical Comments*, p. 3.

Both the colleges and the universities must, however, exercise caution when responding to changes in student demand. Institutions cannot assume that certain short-term enrolment shifts will continue in perpetuity and must ensure that the projection of future manpower needs will not be allowed to create over-production or under-production problems in the future.

Council is convinced that existing needs can be met by the existing post-secondary system and that future needs can be met by institutional flexibility within that system. There may be relatively short-term shortages or surpluses of graduates of certain programs, but usually these will be reflections of general economic conditions and thus not a consequence of any structural weakness of the Ontario system.

Creation of a Third Stratum

In general, the MCU Report sees the possible creation of a formal "third stratum" in terms of the establishment of "polytechnics" on the Ryerson model - that is, institutions which would have a significant commitment to both diploma and degree level studies. They would be created, according to the Report, by either:

(a) "the expansion of some of the (CAAT) three-year programs in technology to four-year programs",[24] or

(b) "formally merging colleges and universities that have complementary theoretical/practical strengths".[25]

Council notes that the report does not mention the possibility of one or more universities undertaking a major thrust into diploma level programming as a further option.

Among the responses to the Report, there is little support for the establishment of a new, formal "polytechnic" stratum. As the submission from Loyalist College states, "it does not seem advisable to encourage another stratum of technical educational institutions funded by the public purse resting somewhere between the CAATs and the universities".[26] Similarly, the Chairman of the Board of Governors of Sault College suggested that the MCU paper failed "to justify the need to expand the third layer of post-secondary education in Ontario".[27]

The reasons given for the undesirability of a formalized approach are many and varied. The Committee of Presidents suggests that "the addition of more fundamental theoretical studies to the colleges curriculum, or more practical and applied studies to the universities could detract from the purpose of both".[28] Centennial College argues that the creation of a new stratum would "put in question the worth of a CAAT diploma"[29] and "The arbitrary elevation of a few colleges to a new, middle level would demoralize the faculty, staff, students and communities served by the other colleges".[30] Even the MCU Report itself contains trenchant criticisms of such a scheme, including "a great danger that an expanded polytechnic stratum will cause resources to be shifted to degree programs at the expense of diploma programs that cater to skilled manpower needs".[31]

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[23] Statistics Canada.

[24] MCU, *op. cit.*, p. 15.

[25] MCU, *op. cit.*, p. 56.

[26] Buckley, E.J. and Colford, G.D., *Report on Polytechnic Education in Ontario*, p. 2.

[27] Letter from Mrs. M.A. Dobie to Dr. H.K. Fisher, January 29, 1981.

[28] Committee of Presidents, *op. cit.*, p. 3.

[29] Centennial College, *op. cit.*, p. 3.

[30] *Ibid.*, p. 4.

Council is convinced that there is no advantage to be gained by the creation of a formal third system of "polytechnical" post-secondary institutions.

Consultation and Coordination

While rejecting the notion of a formal "third stratum", Council is equally convinced of the need for expanded and strengthened informal mechanisms for consultation and co-ordination.

Throughout the MCU Report there is ample evidence of the need for what the Ontario College of Art has termed "co-operation among institutions towards joint programmes and coordination of programmes in disciplines where such are appropriate".[32] In its consideration of programs in Business and Business-related Studies, the report noted "considerable" overlap between institutions and asked "whether the extensive overlap does not indicate duplication and is not an argument for more consultation and co-ordination between the levels to ensure an adequate response to industrial needs".[33] Similarly, in examining programs in Computing, Data Processing and Related Studies, the report asks "In view of the continuous nature of the needs of industry, should the educational programs not be reviewed and possibly coordinated on a broader basis...?".[34] Also, in its discussion of "Educational Programs and the Professions", the report suggests "that more coordination in program planning between universities and colleges should be encouraged in career-oriented programs".[35]

The respondents are equally clear on the need for greater "interface". Ryerson, for example, supports the report's proposal for the "establishment of program coordination mechanisms between colleges and universities in fields of high manpower demand and where the nature of the studies is 'applied' and continuous".[36] The Ontario Confederation of University Faculty Associations notes that "Greater co-ordination between colleges and universities in such programs as business, medical technology, computer studies, and fine arts is needed".[37] Similarly, COU is:

> ...prepared to acknowledge that the universities should be vigilant and energetic in attempting to assess and fill societal needs in the polytechnic area in Ontario, not only for degree programmes, but also for diploma and certificate programmes. More coordination and communication is essential. COU will encourage its members and cooperate with (MCU) in this regard.[38]

There is, however, no consensus on the nature and extent of the program "bridging" which is required. Ryerson, for example, argues that polytechnic education "faces a managerial crisis, which almost certainly requires intervention by government to establish a process through which polytechnic programs across the system may be planned and implemented in a rational way...".[39] It then goes on to suggest two options for the exercise of such intervention: an "Advisory Council on Polytechnic Education" which "would function in relation to polytechnic programs in a manner analogous to the OCUA's present mandate vis-à-vis university programs...",[40] or an "Ontario Committee for Applied Education" which would provide informational and planning resources to the Ministry, to the OCUA and the Council of Regents and to post-secondary institutions", and "would also provide advice on future educational development needs in its sphere of reference".[41] The two mutually-exclusive bodies proposed by Ryerson would, however, each operate in an advisory capacity to the Minister.

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[31] MCU, *op. cit.*, p. 55.

[32] Letter from Dr. P.D. Fleck to the Minister of Colleges and Universities, January 12, 1981, p. 1.

[33] MCU, *op. cit.*, p. 22.

[34] *Ibid.*, p. 28.

[35] *Ibid.*, p. 48.

[36] Ryerson, *op. cit.*, p. 55.

[37] Letter from Dr. S.J. Shorten to Dr. H.K. Fisher, January 30, 1981, p. 1.

[38] COU, *op. cit.*, p. 4.

[39] Ryerson, *op. cit.*, p. 5.

The Committee of Presidents, on the other hand, suggests:

> Consultation and coordination are essential between educational institutions which need to interact without overlapping or being discontinuous, but it is essential that such coordination does not become bureaucratic, nor dominated by any one particular group.[42]

Most of the college responses echo this concern and suggest that a desirable level of coordination would "be accomplished by more liberal transfer credit and course equivalency arrangements".[43]

Council is reminded of the fact that external program review and approval is an integral part of most polytechnic education. At the CAAT level, proposals for new or modified educational programs are reviewed by the Council of Regents in consultation with Ministry staff and appropriate advisory bodies, and must be approved by that Council before being offered. At the university level, approval by the Minister, upon the advice of OCUA, is required for all new professional and graduate programs, for funding purposes. Ryerson is required to follow certain procedures in order to obtain approval by the Minister, on the advice of OCUA, for the funding of existing, unauthorized, degree programs or for the funding of any new degree or diploma program. Thus, for the most part, proposed polytechnic programs are reviewed by either OCUA or the Council of Regents and are not likely to be approved without evidence of prior appropriate consultation.

There are, however, two particular types of polytechnic programs which may be perceived as representing "gaps" in the program review process.

First, there are programs offered jointly by a college and a university leading to the awarding of both a diploma and an undergraduate degree. In its submission, COU presented information on thirteen such programs and reported that "a number of other cooperative academic ventures (are) currently under discussion with the colleges".[44] While the college component of such programs is reviewed by the Council of Regents, there is no review process in place for the university component.

Second, many polytechnic programs at the university level are likely to fall within the category of "quasi-professional" programs. As defined by Council, this category "consists of programs which are neither 'core' Arts and Science subjects nor strictly professional disciplines".[45] Since they are undergraduate programs, and are not in recognized professional areas, they do not require approval by the Minister (and OCUA review) prior to being funded.

With regard to joint programs, Council is aware that Ryerson feels "very strongly that there should be formal review and approval by OCUA and the Council of Regents of any programs in the polytechnic field which are jointly developed by a university and a community college".[46] Given the rigorous review process to which all of Ryerson's programs are subjected, Council can sympathize with that institution's desire to see equivalent rigour applied to the approval of similar programs at other institutions.

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[40] *Ibid.*, p. 58 - 59.

[41] *Ibid.*, p. 60.

[42] Committee of Presidents, *op. cit.*, p. 4.

[43] "Minutes of an Ad Hoc Committee of the Board of Governors of Canadore College of Applied Arts and Technology concerning Polytechnic Education in Ontario", December 9, 1980.

[44] COU, *op. cit.*, p. 5.

[45] OCUA, *Seventh Annual Report*, p. 61.

[46] Ryerson Polytechnical Institute, *Brief to the Ontario Council on University Affairs*, March 13, 1981, p. 11.

In Council's opinion, joint programs are of more direct concern to the Council of Regents than they are to OCUA. There is more danger of such programs reresenting a threat to the integrity of the colleges than to the universities. As the President of Confederation College notes:

> ...there is mention of 'bridging' between college and university programs. This sounds innocuous and acceptable, but extensively used, would simply result in the colleges becoming 'feeders' for the university system.[47]

For these reasons, Council has recently reached an informal understanding with the Chairman of the Council of Regents concerning the review of all new proposed joint CAAT/university programs. Under this arrangement, if it is approved by the Council of Regents, that body will first review the college component of the proposed program. If requested by that Council, OCUA will provide advice on any matters arising from the proposal. In special circumstances, an ad hoc joint Council of Regents/OCUA advisory committee may be created. Thus, an appropriate review process will occur.

With regard to "quasi-professional" polytechnic undergraduate programs, Council has noted Ryerson's concern that such programs could undermine the Institute's position within the post-secondary system. Council notes as well, that COU has recently established an informal "Committee of Vice-Presidents, Academic" in order to facilitate the exchange of information concerning new undergraduate programs proposals. Such an exchange would assist in identifying areas for new initiatives and assessing new proposals in light of anticipated needs. Since a representative of Ryerson is now serving as a member of that Committee, *it would appear that the difficulties associated with "quasi-professional" programs might be resolved within COU.* Should this prove not to be the case, then it may be necessary for the Minister to require that such programs be formally submitted for funding approval.

Applied Research

The MCU Report points out that "At the present time research is not part of the mandate of either Ryerson or the colleges...".[48] The report goes on to suggest, however, that recent indications of significant increases in research and development activity in Canada may give rise to the possibility of extending the mandate of Ryerson, and perhaps some of the colleges, to include certain research functions. The report also states, however, that:

> Such a move would not appear to be justified without a careful study of staffing and the resource implications. It should not be contemplated unless there is a clear indication of a definite and massive increase in research and development activity in Canada.[49]

Ryerson has, for some time, advocated the expansion of its mandate to include a form of applied research. In its response to the MCU Report, the Institute is quite explicit:

> ... we firmly believe that it is...appropriate and necessary that Ryerson have an in-house applied research environment in order to motivate students, to expose them to the process of technological development as part of their learning experience, and to provide faculty with on-going research opportunities with industry.[50]

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47. Letter from Mr. B.E. Curtis to Dr. H.K. Fisher, December 31, 1980, p. 3.

48. MCU, *op. cit.*, p. 49.

49. *Ibid.*, p. 50.

50. Ryerson, *Report of the Ryerson Commission on Polytechnic Education*, p. 50.

The question of expanding institutional mandates to include research, insofar as it pertains to the colleges, comes under the purview of the Council of Regents. As far as the question pertains to Ryerson, OCUA has commented, in Advisory Memorandum 80-IV ("The Role of Ryerson Polytechnical Institute") as follows:

> Council recognizes the important position which the Institute occupies within the Province's post-secondary educational system and the effective way in which it has discharged the responsibilities associated with that position....
>
> Given the position which the Institute occupies...and the specific academic orientation of its faculty, Council believes that Ryerson, as an institution, should not have a direct responsibility for either applied or basic research. The words "as an institution" in the previous sentence have a specific meaning in Council's view. They imply that Ryerson, unlike the universities but like the CAATs, should not be funded for the direct or indirect operating costs of research that are normally met from Government of Ontario operating grants to institutions with acknowledged roles in both basic and applied research. Instead, Ryerson must be recognized as an institution devoted to instructional activities and the maintenance of effective liaison with the public and private sectors - within which the Institute's graduates will work.
>
> The faculty at Ryerson should be encouraged to do work "in the field". If an industry or government agency wishes to have testing or evaluation done at Ryerson, the service should be offered on a complete cost recovery basis.[51]

Epilogue

Council is aware that, in the preceding pages, it has not dealt directly with certain specific issues concerning polytechnic education.

The question of transfer credits, for example, lies within the realm of institutional disposition and it would be presumptuous for Council to infringe upon an area of institutional autonomy without extreme care and significantly greater preparation. Council is satisfied that the universities will consider the question of "liberalization" in this matter with due regard to the points raised by many of the CAAT respondents. In addition, COU continues to monitor this area of concern.

Council is glad to have the opportunity, however, to re-affirm its conviction that Ontario's post-secondary educational institutions are providing, in general, high quality and broadly comprehensive polytechnic education. While more can be done, the ability and willingness of the post-secondary system to provide as much excellence as resources permit cannot be questioned.

W.C. Winegard
Chairman
June 19, 1981

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[51] OCUA, *Seventh Annual Report*, p. 128.

Appendix A

Responses to "Polytechnic Education in Ontario"

Provincial Organizations:

- Committee of Presidents of Colleges of Applied Arts and Technology
- Council of Ontario Universities
- Ontario Association of Certified Engineering Technicians and Technologists
- Ontario Confederation of University Faculty Associations

Colleges of Applied Arts and Technology:

- Canadore College
- Centennial College
- Conestoga College
- Confederation College
- Loyalist College
- Mohawk College
- Sault College
- Sir Sanford Fleming College

Other Respondents

- Ontario College of Art
- Mr. S. Mitminger
- Mr. G. Sinclair
- Ryerson Polytechnical Institute

81-IV Funding for the Undergraduate Program in Geological Engineering at the University of Waterloo

In March 1980, Council received a formal request from the University of Waterloo that Council "approve the establishment of an undergraduate program in Geological Engineering at the University of Waterloo and recommend to the Ministry of Colleges and Universities that the normal Basic Income Unit formula funding be provided for this program". This request was accompanied by documents which outlined the program and provided answers to the questions raised by Council in Advisory Memorandum 77-V when considering funding for the Mining Engineering and Mineral Processing Engineering programs at Laurentian University.

Upon receipt of the request, Council forwarded the complete proposal to the Council of Ontario Universities (COU), requesting the advice of COU and the Committee of Ontario Deans of Engineering (CODE) before making any decisions about the program. Council stated that:

> Such advice should cover the questions of need for the program, the ability of the University to offer the program, the appropriateness of having the program at that institution, the availability of the program elsewhere, etc. At a time of serious underfunding in the system, it would be helpful to know the reactions to the program from institutions with similar programs.

In December, Council received COU's response to Council's request for advice, along with comments received by COU from several universities with engineering programs, CODE, and the Association of Professional Engineers of Ontario (APEO).

In its response, COU outlined its findings regarding the need for the program (labour market demand and student demand), the ability of the University to offer the program, the availability of the program elsewhere, and the appropriateness of having the program at the University of Waterloo. However, COU expressed difficulties in dealing with the matter and did not make any specific recommendation regarding funding for the program.

> First, we have not yet reached a firm position on whether it is appropriate or feasible for COU to make judgments on individual academic programmes in relation to institutional roles....Secondly, if COU were to undertake to make such judgments it has as yet no adequate mechanism (such as ACAP) for assembling data and making informed judgments on undergraduate programmes. In these circumstances our Council has found itself dependent largely on comments from those whose legitimate vested interests are not necessarily compatible with the interest of Waterloo, an approach that is clearly open to criticism. Our advice, therefore, does not include a specific recommendation for or against funding.

In the letter COU also stated that the question of COU's role in the review of new program proposals at the undergraduate level requires much discussion, both within COU itself and between COU and Council, before being satisfactorily resolved.

In view of COU's letter, and the various concerns that were expressed in the submissions to COU, Council felt it necessary to seek additional advice. Council therefore appointed two consultants, Dr. Arthur N. Bourns (former President of McMaster University) and Dr.J. Percy Smith (former Vice-President, Academic of the University of Guelph), to advise Council on the program.

The report of the consultants, received on April 8, 1981, has been very helpful to Council.[1] The consultants had available to them all the documentation that Council had received. They decided to test and appraise the "three principle arguments" put forward by the University of Waterloo:

i) that the demand in Canada for graduates of such a program as the one proposed is strong enough to warrant its being offered;

ii) that the University of Waterloo program will be exceptionally strong;

iii) that the co-operative nature of the program will markedly increase that strength.[2]

In carrying out their assessment, the consultants interviewed "senior executive officers of six major corporations that employ large numbers of engineers in operations including exploration, mining, petroleum development, and hydro-electric generation", the heads of two consulting firms concerned with geotechnical engineering, and the President and Vice-President, Academic of the University of Waterloo, and "conferred with appropriate officers of two large universities outside Ontario". They also reviewed, "in so far as was possible", literature dealing with the employment situation in this area of engineering, as well as a report dealing with the geological sciences in Canada.[3] The consultants concluded by recommending that the program be funded and summarized their findings as follows:

i) While manpower demand is difficult to assess and is in any case subject to relatively rapid change as the economic and political situation changes, we believe that there is currently a need in Canada for more geological engineers with geotechnical specialization, and that the need will grow through the next decade.

ii) While we have noted certain reservations that were expressed to us in regard to the proposed program, and we believe that the University of Waterloo ought to consider them seriously, it is clear that Waterloo, with its particular strength in geohydrology, is well equipped to provide a strong program in geological engineering with a geotechnical emphasis.

iii) The co-operative nature of the proposed program is a very considerable asset.

Council reviewed the program in geological engineering based on the submissions received. In its deliberations, Council considered such criteria as quality, institutional appropriateness of the program, need and duplication, as well as whether the program would require any additional resources.

With respect to both quality and institutional appropriateness, the strength of the University of Waterloo in engineering is well recognized. It is also clear that the University has particular strength in the geotechnical, especially geohydrological, area. In their report, the consultants stated:

> There was general recognition of the high reputation that Waterloo enjoys for its engineering programs, and - in relation to the proposal - its formidable strength in hydrology and hydrogeology.

In its proposal, the University of Waterloo stated that it was in the area of geotechnical engineering and geohydrology that it would be able to excel with little or no change in existing offerings.

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[1] The report of the consultants has been included as Appendix A to this memorandum.

[2] Consultants' Report, page 1.

[3] E.R.W. Neale and J.E. Armstrong, *The Geological Sciences in Canada, 1979, Part One: Geology and Geophysics in Canadian Universities*, Ottawa, 1981.

While acknowledging the general recognition of Waterloo's particular strengths, the consultants noted the main reservations which had been expressed about the program itself:

> The principal reservations, however, had to do with the danger that the program may not be sufficiently well-focussed that "Waterloo is in danger of attempting to be all things to all men and will fail," and that the program does not clearly recognize the special strength in hydrology and hydrogeology and build on it.

However, as indicated in their summary points listed above, while the consultants felt that the University should consider seriously the reservations that had been expressed, they believed that Waterloo could offer a strong program in geological engineering with a geotechnical emphasis.

Council shares the views of the consultants with respect to quality and institutional appropriateness. Council is convinced that the University of Waterloo is capable of offering a high quality program in geological engineering emphasizing geotechnical and geohydrological engineering, and that this type of program is appropriate given Waterloo's existing strengths. However, Council is concerned about the reservations expressed regarding the focus of the program and agrees that the University should consider them seriously. Waterloo should modify its program to focus more clearly on its geohydrological strengths.

With respect to need, Council accepts the conclusion of the consultants that there is a need in Canada for more geological engineers with a geotechnical specialization and that this demand will increase over the decade. Council also notes, however, that the three existing programs in Ontario have excess capacity. Two of these programs have options in geotechnical engineering and the third has some offerings in this area. Given this excess capacity situation, Council could not support the introduction of another broadly-based program in geological engineering. However, Council believes that Waterloo is able to offer a well-focused, strong program emphasizing geotechnical, and in particular geohydrological, engineering that would not represent a duplication of existing program configurations. Council also notes the conclusion of the consultants that: "The co-operative nature of the proposed program is a very considerable asset." The consultants also indicated that Waterloo has been able to attract many students for the first year of the proposed program. Council has concluded from all of the above that the Waterloo program will help to fill a need in Canada.

In conclusion, Council believes that the University of Waterloo has the capability to offer a strong program in geological engineering with a geotechnical emphasis and that such a program would be well-placed at the University. Council has received the assurance of the University of Waterloo[4] that it does not intend to offer a multi-faceted program in geological engineering but rather one emphasizing geotechnical, especially geohydrological, engineering. In this connection, Council must reiterate its caution to Waterloo regarding criticisms about the focus of the program. Council has also received Waterloo's assurance that the faculty and staff resources are already in place and that no additional capital resources are required. Council therefore concludes that an undergraduate program in geological engineering, with the affirmed emphasis on geotechnical and in particular geohydrological engineering, should be offered and funded at the University of Waterloo. Council accordingly *recommends to the Minister:*

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[4] See Appendix B.

OCUA 81-10

FUNDING FOR THE UNDERGRADUATE PROGRAM IN GEOLOGICAL ENGINEERING AT THE UNIVERSITY OF WATERLOO

THAT an undergraduate program in geological engineering, emphasizing geotechnical and, in particular, geohydrological engineering, at the University of Waterloo be deemed eligible for formula support beginning in 1982-83 and that all eligible enrolment from 1981-82 on be included in the appropriate moving average of the institution.

W.C. Winegard
Chairman
June 19, 1981

Appendix A

REPORT ON A PROPOSED PROGRAM IN GEOLOGICAL ENGINEERING AT THE UNIVERSITY OF WATERLOO, PREPARED FOR THE ONTARIO COUNCIL ON UNIVERSITY AFFAIRS

The following report is written in response to a request made by the Chairman of the Ontario Council on University Affairs for advice as to whether or not the Council should recommend to the Minister of Colleges and Universities that a new undergraduate professional program in geological engineering with a geotechnical orientation, proposed by the University of Waterloo, should be funded. A statement by the University of Waterloo outlining the proposal had been submitted by OCUA to the Council of Ontario Universities with a request that the latter body advise OCUA on the question of funding. COU had solicited comments from its member institutions and received responses from eight of them and also from the Association of Professional Engineers of Ontario and the Committee of Ontario Deans of Engineering. COU had, however, declined to make a specific recommendation on the subject of funding, being uncertain of the appropriateness of its doing so. The authors of this report were accordingly called in as consultants.

We had before us the University of Waterloo proposal together with various supporting documents prepared by the University, the comments of COU member institutions and of APEO and CODE, and the correspondence between OCUA and COU. Two of the institutions supported the proposal without reservation. One supported the proposed program but felt it should be offered elsewhere than at Waterloo. Six expressed misgivings of various kinds and degrees, a main point of concern being that the well-established programs at Queen's and Toronto and the newer one at Windsor have available student places. APEO and CODE questioned the need for the program, but made no recommendations.

In support of its proposal, the University of Waterloo offered three principle arguments:

i) that the demand in Canada for graduates of such a program as the one proposed is strong enough to warrant its being offered;

ii) that the University of Waterloo program will be exceptionally strong;

iii) that the co-operative nature of the program will markedly increase that strength.

It appeared to us that these were indeed the propositions to be tested in order for a recommendation for or against funding to be well based. In order to appraise them, we interviewed senior executive officers of six major corporations that employ large numbers of engineers in operations including exploration, mining, petroleum development, and hydro-electric generation, as well as the heads of two firms of consultants concerned with geotechnical engineering. Most, though not all, are based in Ontario; all but one are nation-wide in their interests. We conferred with appropriate officers of two large universities outside Ontario and we reviewed, in so far as was possible, reports and other literature relevant to the employment situation in the field of engineering in question. And we interviewed the President and the Vice-President, Academic, of the University of Waterloo.

As is usual in the field of manpower, it is difficult to obtain or make predictions with confidence, except in terms that are unsatisfactorily broad. The problem in the engineering profession is probably even more difficult than in other professions because no accurate data base has been established. In its most recent issue (March 1981) *Engineering Manpower News*, a publication of Canadian Council of Professional Engineers, quotes the 1970 report *Ring of Iron* on the "dearth of data concerning the number of engineers, where they came from and to what level or in what specialties they are educated," and the News goes on to say, "There is still 'a dearth of data'!" The occasion for the comment was the recent announcement of the plan to establish a Canadian Engineering Manpower Inventory.

In the circumstances, then, it is not surprising that comments made to us on the question of demand were somewhat varied. It became clear, however, that a demand exists and may be expected to increase in the petroleum industry, where the field of secondary and tertiary recovery calls for growing numbers of geological engineers, and the Alberta tar sands development requires engineers with a strong geotechnical background, especially in hydrology and rock mechanics. A somewhat analogous situation exists, though probably on a somewhat smaller scale, in the field of waste disposal and in large earth-moving projects, where expertise in geohydrology will be increasingly needed.

Geotechnical engineers are essential also in coal-mining, a field in which expansion is occurring. The consulting engineers with whom we conferred stated unhesitatingly that the demand for individuals with good qualifications in geohydrology and geotechnical engineering is strong, particularly in northern and western Canada. The fact that the University of Waterloo has been able to recruit twenty-six students for the first year of its proposed program, and indeed had to refuse admission to about as many as were accepted, suggests that the students themselves perceive an assured demand for their services.

Against those supportive facts we must note that both APEO and CODE were dubious as to the justification for the introduction of an additional program in geological engineering. We note also that the opinions reviewed in the preceding paragraph were linked with comments on the nature of the program itself. There was general recognition of the high reputation that Waterloo enjoys for its engineering programs, and - in relation to the proposal - its formidable strength in hydrology and hydrogeology. Reservations were expressed about its quality in soils mechanics, and it was suggested that some strengthening of that area is needed. The principle reservations, however, had to do with the danger that the program may not be sufficiently well-focussed, that "Waterloo is in danger of attempting to be all things to all men and will fail," and that the program does not clearly recognize the special strength in hydrology and hydrogeology and build on it. Misgiving was also expressed as to whether the program genuinely represented a "marriage" of geology with engineering, and whether there was some danger that it might come "under the thumb" of one of the principle disciplines involved in it.

In a recent wide-ranging report,[1] E.R.W. Neale and J.E. Armstrong comment on the employment picture and on the desirability of developing more joint undergraduate programs involving engineering and geology or geophysics. As to the former, they refer to the "excellent employment opportunities" for geotechnical graduates (p. 98); as to the latter, they emphasize the importance of close co-operation among the disciplines concerned. They make these recommendations, among others (p. 99):

> Those universities with both engineering faculties and geology of [sic] geophysics departments which do not have joint undergraduate programs should make every effort to introduce such programs in order to produce geological and geophysical engineers to meet the growing demand from industry and government for those with such combined training.
>
> Where universities include geotechnical scholars in their engineering faculties yet have no joint programs with geology or geophysics, every effort should be made to establish joint teaching and research endeavours in order to produce well-trained professionals in the rapidly growing field of geotechnics.

Finally, we found unanimous recognition of the great advantages that the University of Waterloo has already achieved through its co-operative approach to engineering education. In relation to geotechnical engineering, some persons whom we interviewed remarked that

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(1) E.R.W. Neale and J.E. Armstrong: *The Geological Sciences in Canada, 1979, Part One: Geology and Geophysics in Canadian Universities* (Ottawa, 1981). Available from the Canadian Government Publishing Centre, Supply and Services Canada.

existing programs do not provide sufficient systematic training in field work, instrumentation, testing, and monitoring; and that summer employment of a more or less haphazard kind does not deal with this problem. One consulting engineer said bluntly, "Summer students are a one-shot affair and we do not waste too much time on them." There was emphatic recognition that the "apprenticeship" aspect of Waterloo's co-op approach, providing for regular and sustained work in industry as part of the academic program, is invaluable to students and highly satisfactory to industry, and that these advantages could be expected to apply in geotechnical engineering as elsewhere.

In the report already referred to, Neale and Armstrong comment on the value of co-operative programs, in particular that at Waterloo, and go on to say (p. 34):

> We suggest that geology and geophysics departments investigate the establishment of work term programs in co-operation with industry, following the lead of Waterloo and Victoria university geologists and geophysicists. These could be implemented through existing engineering co-op programs or initiated through faculties of science.

We sum up as follows:

i) While manpower demand is difficult to assess and is in any case subject to relatively rapid change as the economic and political situation changes, we believe that there is currently a need in Canada for more geological engineers with geotechnical specialization, and that the need will grow through the next decade.

ii) While we have noted certain reservations that were expressed to us in regard to the proposed program, and we believe that the University of Waterloo ought to consider them seriously, it is clear that Waterloo, with its particular strength in geohydrology, is well equipped to provide a strong program in geological engineering with a geotechnical emphasis.

iii) The co-operative nature of the proposed program is a very considerable asset.

We recommend that the proposed program in geological engineering at the University of Waterloo be funded.

8 April 1981
Arthur N. Bourns
J. Percy Smith
(Consultants)

Appendix B

Dr. W.C. Winegard
Chairman
Ontario Council on University Affairs
700 Bay Street, 7th Floor
Toronto, Ontario
M5H 2T8

Dear Dr. Winegard:

Further to our proposal to establish a program in Geological Engineering as part of our total Engineering program at Waterloo, I wish to re-affirm our emphasis on geotechnical aspects especially geohydrological engineering.

It is not our intention to offer a multifaceted geological engineering program to include other aspects as, for example, mineral exploration. Of course, the individual courses in the program may cover a wider range but only in support of the central thrust which is geotechnical.

As you know, we have real strength in this area and intend to maintain that emphasis and not to build up our resources in all areas of geological engineering.

I hope this re-affirmation will be helpful to you and your Committee in reaching a decision on our proposed program in Geological Engineering.

Sincerely,

B.C. Matthews
President

BCM:jo

81-V Supply of and Demand for Graduates of Certain Professional Programs in Ontario

On May 25, 1981, the Minister of Colleges and Universities wrote to the Chairman of Council as follows:

> As you know the government is concerned about the supply of university-educated manpower in the scientific, engineering and professional fields. It is felt that the economic welfare of this province will be dependent on the ability of the educational system to train engineers, scientists and other professionals in sufficient numbers to respond to the demand coming from the various sectors of economic activity.
>
> The Policies and Priorities Board of Cabinet has directed the Ministry of Colleges and Universities, in consultation with the Ontario Council on University Affairs, to explore options and develop an action plan to meet forecasted professional manpower shortages in the short and long-term. The conversion of an existing university facility to a high technology training centre is one of the options to be considered.

Council, by way of this memorandum, is providing the Minister with advice on the various issues raised in her letter.

Since the Policies and Priorities Board has requested that the Ministry report by the end of July, 1981, Council has been forced to restrict the scope of its consideration. Although general concern has been expressed with regard to the future supply of university graduates in the "scientific, engineering and professional fields", it would appear that certain discipline sectors are of particular concern. Council has decided to focus on university programs in engineering, commerce and administration, and computer science.

Despite the wide range of programs available within each discipline area (certificate, diploma, bachelors, graduate diploma, masters and doctoral), and the number and variety of sub-disciplines incorporated within each general area, Council has been compelled to adopt a macroscopic approach in its considerations. Further, Council is aware that its treatment of each discipline area may connote a degree of homogeneity which does not in fact exist. Wherever possible, differentiation by level of study and/or by sub-discipline is attempted. In general, however, Council has restricted its discussion to two levels of study:undergraduate and graduate.

Council has examined currently available estimates of short and long-term demand made by public organizations and authorities. Since formal reports were not always available, Council has also attempted to gather informal estimates from knowledgeable persons familiar with certain discipline areas or with specific industrial sectors. For these reasons, the availability of information, and its comprehensiveness, varies considerably among the three discipline areas considered by Council.

At the same time, Council is mindful of the unreliability of manpower projections in general and of the need to treat such studies with extreme caution. The problems associated with forecasting manpower demand are manifold. As the Canadian Engineering Manpower Council has noted,

> It is extremely important to remember, in drawing conclusions from reports of this kind, that they are necessarily based on assumptions, the validity of which

> can change very quickly. Caution therefore is required in their interpretation. For example, the indices of manpower requirements are based on the authors' past experience, and changing conditions in the market place may well alter the value of these indices to a significant degree.

Examples of problems arising from faulty manpower projections during the 1970's include the following:

(a) an apparent oversupply of nurses led to the reduction of enrolment in nursing schools which, in turn, has resulted in an apparent undersupply,

(b) expansion of enrolment in teacher education programs was encouraged by Government in the mid '70s followed by a decrease in elementary and secondary school enrolments and an over-supply of teachers.

In addition, Council wishes to express concern with the assumptions adopted by many of the forecasting agencies. Often demand is projected on the basis of perceived significant increases in activity in certain industrial sectors (e.g., energy mega projects and micro-technology expansion). Recent developments would suggest that some caution should be exercised in that such increased activity, although planned, may be deferred as a result of circumstances which can not be anticipated. Thus Council has questioned the specificity of many of the manpower projections. It has examined and treated them more as indications of possible developments or general trends.

Finally, virtually all of the manpower projections examined by Council considered the question of need from a national perspective. Interpreting the results of such projections in terms of Ontario's future needs has often proven difficult and has, in Council's mind, greatly increased the margin of error assumed to exist. On past occasions, Council has been assured by the Minister that the movement of university graduates to other provinces is not a matter of concern to Government; indeed, Ontario perceives that it has a national role to play in this regard. For present purposes, Council assumes that this policy will be continued.

Concerning estimates of future manpower supply, Council feels it is in a much more secure position. Extensive consultation with the Ministry, the Council of Regents and, in particular, the Council of Ontario Universities (COU) has been of considerable assistance. COU, for example, upon receipt of a request from Council for appropriate information, surveyed its members to determine not only "the changes that have occurred in university enrolment in (the) three areas during the past five years", but also "the existing capacity of the universities to expand further in these areas". The data submitted by COU were very extensive and Council wishes to express its appreciation to COU and its member institutions for their cooperation. Council has also received some data on enrolment and future plans from the other provinces.

In the following three sections, therefore, Council presents its analysis of estimated supply and demand, and possible methods of increasing supply, in each of the specified areas.

ENGINEERING

With respect to demand, Council's principal sources have been a report published by the Technical Service Council, *Supply of and Demand for Engineers in Canada,* and a report prepared for the Canadian Council of Professional Engineers entitled *Engineering Manpower Requirements 1980-2000 for Major Energy-Related Projects in Canada.* Council has also conferred with individuals from various relevant organizations and reviewed other literature pertaining to the demand for engineers in Canada, such as *Labour Market Development in the 1980's,* a report of the federal Task Force on Labour Market Development prepared for the Minister of Employment and Immigration. Supply side information was obtained from the sources mentioned in the introduction, the Technical Service Council report and the Canadian Engineering Manpower Council.

In general, all relevant sources indicate that there currently exists a strong demand for engineers in Canada and that this situation will continue in the short-term. The Technical Service Council report estimated that by the mid-1980's the supply of and demand for university graduates in engineering will be in reasonable balance. Beyond the mid-1980's the Technical Service Council projects that supply will exceed demand while other projections indicate increased demand for engineers. Clearly, beyond the short-term, projections are less reliable. Among other factors, a major source of uncertainty with respect to engineering studies is the whole field of energy.

The Technical Service Council report provides estimates of the supply of and demand for bachelors and masters level engineering graduates for the period 1980-90. The demand side estimates take into account major projects coming on stream to 1985.

Three growth scenarios - low, moderate, and high - are provided for each of supply and demand. The report considered the moderate growth scenario to be the most plausible for both the supply and demand sides, a comparison of which yielded the following results:

> For bachelors' level engineers, the moderate demand versus moderate supply scenario... shows a marked continuing growth in the demand for engineers to 1983 with supply falling behind requirements. Beyond 1983, in this scenario, the growth in demand begins to decline with supply and demand coming in to approximate balance in 1984. Beyond 1984, supply exceeds demand.
>
> In the moderate demand versus moderate supply scenario for masters' level engineers... supply exceeds demand through the forecast period, although the magnitude of the oversupply, in absolute numbers, is not large.

The report makes two important points regarding the results. The first point is that the predicted oversupply of masters level engineers may not mean unemployment but rather employment of these graduates in positions unfilled because of short supply of bachelors level engineers. Secondly, the report urges caution in the interpretation of the results beyond 1985 because the demand side was adjusted for major projects only to 1985:

> Beyond 1985, it is difficult to project with acceptable accuracy the number and magnitude of such projects which may or may not come on stream during the second half of the forecast period.

In this connection, the report suggests that engineering manpower forecasts should be reviewed every five years.

The supply and demand forecasts in the Technical Service Council report are national in scope. No information, therefore, is provided specifically for Ontario. On the demand side, the report prepared for the Canadian Council of Professional Engineers (CCPE) provides information by province. It forecasts engineering manpower requirements (excluding technicians, technologists, etc.) for major energy-related projects for the period 1980-2000. Based on information regarding major projects that are planned for the period, by province, the report estimates engineering manpower requirements for the projects. The report indicates that the major projects in Ontario are primarily related to nuclear power and that the largest share of all provincial energy-related mega projects will be in Alberta.

The most important part of the CCPE forecast, from a national perspective, is the projected large increase in demand for engineers for energy mega projects. Further, on the basis of information available concerning the scheduling of projects, the report concludes that this demand will peak by the end of the decade.

The Task Force on Labour Market Demand arrives at similar projections regarding engineering requirements in the second half of the 1980's in its analysis of the occupational composition of employment growth:

> ...relative growth in the engineering and scientific occupations is expected to increase, particularly in the second half of the decade, reflecting the projected growing importance of goods-producing industries and of large, energy-related construction projects in this period.

On the supply side, statistics indicate that the number of undergraduate degrees awarded in Canada has increased considerably over the last five years. Further, information supplied by the Deans of Engineering to the Canadian Engineering Manpower Council indicates that the supply of these graduates will increase to 1984, although at a decreasing rate after 1982. With respect to undergraduate supply on a national basis beyond the mid-1980's, many programs are at capacity with little or no resources to expand. Two institutions surveyed have reduced enrolment. On the other hand, the University of Alberta is planning to increase its first year intake by about 20% (100 students) over the next few years while British Columbia is planning a major expansion in Engineering. It is interesting to note that the major problem being experienced in British Columbia is an inability to attract students into engineering programs.

Undergraduate Enrolment

The data supplied by COU concerning enrolment in Ontario university engineering programs shows considerable variation between the undergraduate and graduate levels. Undergraduate enrolment has demonstrated significant growth with a 17.4% increase from 10,317 FTEs in 1976-77 to 12,109 FTEs in 1980-81 (and a 25% increase in full-time degree enrolment since 1975-76).[1] Part-time enrolment remains an extremely small portion of the total and has exhibited extreme variations from year to year. COU's projections for the period 1981-82 to 1985-86 show a "steady state" situation, with a decline, of 0.6%, by the end of the period.

Graduate Enrolment

At the graduate level, on the other hand, enrolment has declined by 6.9% at the masters level (from 1,213 FTEs in 1976-77 to 1,129 FTEs in 1980-81) and 19.4% at the doctoral level (from 556 FTEs in 1976-77 to 448 FTEs in 1980-81). Part-time enrolment (23.1% of masters FTEs and 9.2% of doctoral FTEs) has remained fairly constant. As at the undergraduate level, the COU projections show little change occurring over the next five years.

Capacity

It would appear that, in general, there is currently little available capacity at the undergraduate level but much at the graduate level. COU's figures show that, in terms of first-year full-time students, undergraduate engineering programs are presently operating at 3.7% above desired capacity. There is, however, significant space in certain sub-discipline areas (for example, metallurgical engineering and engineering science) and even in those areas with no space (for example, electrical, mining and mechanical engineering) there is at least one institution in the province with some available capacity.

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[1] Enrolment data are calculated from annual Fall headcounts provided by COU. Only the fifteen provincially-assisted universities are included. With respect to engineering, the figures submitted for the University of Waterloo do not include students registered in the Co-operative Program but not enrolled in Fall term classes and therefore represent an underestimate of that institution's enrolment in engineering.

Graduate engineering programs would not have problems accommodating additional students. Masters programs have space for significantly more full-time students, as do doctoral programs.

Technicians and Technologists

In their commentary on the report for the Canadian Council of Professional Engineers, the Canadian Engineering Manpower Council makes the following statement:

> While the... report focuses attention on the importance of the skills and availability of professional engineers to the successful completion of Canada's energy-related construction programs, it also reminds us of the importance of engineering teams - including not only engineers but scientists, technologists, technicians and skilled tradesmen, which must be assembled to do the necessary design and construction....
>
> The reports (sic) suggests that there will be great challenges and opportunities for Canadian professional engineers, scientists, technicians, technologists and skilled tradesmen as major energy-related projects unfold.

The commentary also includes the following statement:

> We are concerned also at the suggestion that supply by itself will dictate capital construction schedules. We believe that Canadian industry can and will adjust to manpower shortages through changes in utilization of manpower and by other measures.

These statements suggest that the supply of and demand for technicians and technologists should also be reviewed. In Ontario, it appears that the demand for diploma graduates of Ryerson's technology programs is quite strong. At present only a small percentage of the students are continuing full-time to the degree level. At the Colleges of Applied Arts and Technology (CAAT's) however, enrolment in the technology division (excluding computer-related programs) has not grown as quickly as in other areas of the CAAT's. In fact, excess capacity exists in these programs.

Summary

In general, the information available to Council indicates that there is a strong demand for engineers in Canada at present and that this demand is likely to continue in the short-term.

Further, the major energy projects planned for the future have the potential to create a large increase in demand for engineering manpower. However, the actual magnitude of the demand is difficult to predict because of the considerable uncertainties involved, such as timing of projects, government policy, technological change, and potential new projects. The recent announcement of deferral of the Cold Lake project is a good indication of the scope for error regarding manpower projections for these projects.

Nevertheless, the major entry projects do represent a potentially strong source of demand which, given the time structure used in the CCPE report, could have a very high peak. This potential pattern of growth in engineering demand has some important implications for Canada. They are well-stated in the CCPE report:

> The remaining valleys and the major peak... demonstrate the desirability in the national interest of a scheduling of the major energy-related projects for best utilization of the available Canadian engineers.

> The magnitude of the requirements for Canadian engineers for new major energy-related projects, over and above those now engaged in such work, should be incorporated into career counselling of young people and university planning.

It is clearly in the national interest that the planned major energy projects be coordinated to come on stream in a manner that would avoid the type of "bulge" in demand indicated above. Such a peak in demand could result in many projects being deferred because of shortages of manpower or, on the other hand, could result in a major expansion of engineering programs to match supply to the demand peak. The latter case could result in an over-expansion of engineering school capacity and an excess supply of engineers after the peak.

Given the provincial distribution of both energy projects and engineering schools, the coordination of engineering supply and demand is clearly a national problem that will require a concerted inter-provincial and, perhaps even federal, effort. Governments and industry should attempt to smooth the scheduling and manpower requirements of the projects. At the university level, there should be a nation-wide review of present engineering capacity and plans for growth.

The universities of Ontario should not undertake any major expansion without knowledge of the plans of other provinces. On the other hand, Council expects that as events unfold, the Ontario universities will continue to respond to changes in demand, as they have done in the past. However, as indicated above, the universities currently have little available capacity at the undergraduate level, although some sub-disciplines do have some available capacity.

If, on the basis of available evidence and estimates regarding engineering supply and demand, Government wishes to increase enrolment in university engineering programs, the following options might be considered. These options represent both short-term and longer-term solutions. With respect to the longer-term, Council cannot overemphasize the need to exercise caution; the uncertainties involved in long-term projections are considerable.

Options for Increasing Supply

At the *undergraduate level*, Council notes that, despite the capacity data provided by COU, there is no conclusive evidence that any qualified students are being kept out of engineering due to a lack of institutional capacity. For example, a student might have applied to take engineering at the University of Toronto, been turned down and then enrolled in a science program at the University of Toronto. He or she might have been able to find a space in engineering at, say, Ottawa or Queen's, but his/her second choice was a non-engineering program. Such a case should not, therefore, be taken as evidence that space in engineering was not available somewhere in the Ontario system. Council suggests that COU might wish to determine if, in fact, qualified students are unable to find places in engineering programs in Ontario.

At the same time, however, it is evident that in order to increase significantly the future supply of graduates of university engineering programs, Government would need to increase capacity within the system. At best, current available capacity is small. Depending on the magnitude of the increase deemed desirable, and the degree of urgency attached to effecting change, Government would probably be best advised to adopt measures designed to both increase space and to attract more students into the programs.

In terms of increasing the supply of available graduates, the following options appear most relevant:

(a) Employment of Visa Student Graduates
If Government wished to effect immediate significant increases in supply, it could seek, in cooperation with the Government of Canada, to retain some visa student graduates by offering them landed immigrants status or special employment visas to remain in Canada for a limited term. As one university suggests:

> Should the perceived critical manpower shortage be confirmed, one alternative response which should be considered is the adjustment of immigrant status to those graduates of existing programs in the Province who are currently on student visas. Those who chose to remain would, at no cost, immediately increase the manpower supply in critical areas.

In 1980-81, approximately 10% of the total full-time fourth-year undergraduate enrolment in engineering was visa student enrolment.[2] If one-half of these were retained in Canada, the supply of graduates would be increased by 5.4%, approximately 110.

However, the differential effects of such a policy should be noted. Visa student numbers are relatively high in some sub-discipline areas (e.g., civil, electrical and mechanical engineering) and low in others (e.g., design and metallurgical engineering and engineering science).

(b) Visa Student Quota
If Government wished to increase the supply of Canadian and landed immigrant graduates without increasing overall capacity, it could do so by implementing a quota on visa students. Approximately 13% of total full-time undergraduate enrolment in engineering is visa student enrolment. If Government were to impose a quota on the number of such students, more spaces would be made available for Canadian and landed immigrants students. If, for example, a 5% quota on Year I full-time enrolment were imposed beginning in 1982-83, and qualified Canadian and landed immigrant students were found to fill the resultant available capacity, Council estimates that Canadian and landed immigrant enrolment in first year would be increased by 9%, representing approximately 300 full-time students. The full effect of this policy would not be felt, however, until those students entering engineering in 1982-83 graduated some four years later.

It should be noted, as well, that not all institutions would be affected equally by the application of such a policy. The percentage of enrolment in engineering represented by visa students varies significantly from institution to institution.

(c) Special Funding Arrangements
If Government wished to increase the supply of Canadian graduates, and was prepared to expand institutional capacity, some medium-term measures would be available. Beginning in 1982-83, additional financial support might be made available to those universities with engineering programs by changing the way in which enrolment in those programs was funded. For example, modest increases in enrolment could be encouraged by providing full BIU funding for all additional students. Larger increases could probably be obtained by providing directed grants to institutions who had indicated an ability to expand their engineering programs.

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[2] Visa student data pertaining to engineering and commerce and administration were not available for Queen's University. Similar data concerning computer science were not available for Queen's and the University of Toronto.

One university has informed Council that it could increase its first year enrolment by 18% (130 full-time students) if provided with additional financial resources. Another institution has indicated it could increase its capacity in Year I by 22% (105 full-time students) if additional support were provided. Council could advise on the most appropriate method of allocating support once Government decided upon the magnitude of the increased capacity desired.

Certain special arrangements could produce increases in enrolment with increased operating costs and moderate capital expenditures. For example, an engineering faculty could operate a three-term program using the facilities currently available over the full twelve months of the year. Costs for additional faculty and technical staff would represent major expenditures from operating funds. Capital funding would be required for office and research laboratory space but not for instructional laboratories or lecture facilities.

Another option, along the same lines, would be to encourage one or more engineering faculties to move to extended hours of operation (i.e., from 0800 hours to 2200 hours daily). Such action would also increase the potential for part-time study and thereby allow for the upgrading of professional qualifications by members of the workforce. As with any of the options to increase capacity, however, there will be problems in finding qualified faculty in many of the sub-disciplines of engineering.

The effect of such changes, assuming that global funding was increased to offset the costs of additional support, would be significant increases in capacity over a relatively short period of time. The additional resources available to those institutions with engineering programs would probably allow for the acquisition of new faculty (if they were available), equipment and support staff/facilities. It is unlikely, however, that major new capital projects could be supported.

If global funding was not appropriately increased, then additional support for engineering programs would have to be provided at the expense of non-engineering programs. Even those institutions with engineering programs might see their total level of funding decrease, depending on their ratio of engineering BIUs to non-engineering BIUs.

Council notes that there are particular advantages to using existing institutions as a base for expanding professional programs. For example, potential accreditation problems would be avoided. Also, existing institutions would be better able to attract additional qualified faculty and support staff.

(d) Institutional Conversion

The Minister's letter of May 27, 1981 specifically refers to the possible "conversion of an existing university facility to a high technology training centre". There is, however, an intermediate step worthy of consideration but representing conversion of a different nature or extent.

A new engineering facility might be created through the conversion of facilities presently being used for other purposes. Accurate cost estimates could only be provided in specific cases, but the costs which would be incurred would likely include allowances for relocating faculty, the provision of additional equipment, major renovations to the existing facilities and compensation to the parent institution for short-run losses in revenue.

The second approach would consist, as noted in the Minister's letter, of complete institutional conversion. For example, by direct intervention, Government could reduce a selected university's arts and science programs to a "core element" only, remove other programs currently in place, and expand dramatically those facilities and resources directed towards engineering (and possibly commerce and administration and computer science). The university would have to be completely reorganized and restructured at high initial cost.

Whatever the variation adopted, the effects of any form of institutional conversion would be dramatic but decidedly long-term. Significant conversion will require time to implement - especially if new construction is involved. Given a "lead time" of three to five years, the results of such action would likely not be felt until at least 1990. Thus this option provides for significant increases in the supply of graduates well after the effective time-frame of most estimates of future demand.

There are certain disadvantages associatedwith converting an existing institution not now heavily involved, if at all, in these areas. Considerable capital and equipment support would be required. The institution is likely to encounter difficulties in attracting faculty and may have problems with accreditation. Also, the "lead time" for full implementation will be longer.

Moreover, the creation of one or more highly specialized institutions could create problems unless such reorganization is undertaken as part of a general restructuring of the entire university system.

At the *graduate level*, as was noted earlier, the major barrier to an increased supply of graduates is not lack of capacity but rather lack of student demand for the programs being offered. If the students were available, then the universities could accommodate significant additional enrolment at both the masters and doctoral level.

It would appear that there may be some increase in the market demand for masters and doctoral graduates in particular fields of engineering. While the masters situation seems to be one of reasonable balance, the shortage of doctoral level graduates could be very acute. These programs do not, however, operate independently of each other and a significant increase at the doctoral level may require a significant increase at the masters level.

The nature of the problem, and a possible solution, have been succinctly described by one university as follows:

> The shortage of Canadians and landed-immigrants is related to the high starting salaries of B.Eng. graduates, and the resulting high differential between the income of a graduate student and that of an employed graduate. The need then is for an enriched scholarship programme which would serve to encourage graduates to continue to M.Eng. and Ph.D. programmes.

Council concurs with this assessment. A focussed graduate scholarship program could be implemented to attract students into masters and/or doctoral programs in specialized fields of engineering and science.

Council cannot stress too highly that the availability of faculty could be critical in the expansion of engineering programs. Any significant expansion of programs at the undergraduate level would require an even greater supply of qualified faculty and thus would exacerbate existing recruitment problems even further. It is conceivable that special arrangements could be made to allow institutions to hire faculty from outside Canada, but such a policy would only be, at best, a stopgap measure. Long-term there would have to be a dramatic increase in the supply of indigenous Canadian faculty and, therefore, a significant increase in the number of doctoral graduates. This problem will become even more critical within the next ten years as significant numbers of faculty members currently teaching in engineering schools reach retirement age.

On a medium-term basis, Government might wish to explore the possibility of creating a "lend-lease" program. Such a program might be established, in cooperation with industry, to allow graduates presently employed in the private sector the opportunity to serve as faculty members for some specified, limited term. The benefits to be derived, by both the universities and by industry, would not be insignificant and the supply of qualified and experienced faculty thus provided would assist in meeting temporary shortages resulting from any expansion of programs.

COMPUTER SCIENCE

Council has been able to obtain little concrete data with respect to the demand for university graduates in computer science. Council's main source of information has been discussions with individuals familiar with the manpower needs relating to the use of computers in industry and commerce.

The whole computer-related area includes not only the firms within the computer industry involved with equipment, software and information processing, but also the various organizations which have introduced, or plan to introduce, computer facilities into their operations.

In general, it appears that there does exist a shortage of university graduates in computer science and that demand will continue to be strong over the next few years. However, Council can offer no estimate of the magnitude of the shortage. What has become clear during discussions, though, is that there also exists a demand for individuals with all levels of qualifications (ranging from university education with several years of practical experience to no previous computer-related training) to fill the wide range of positions available in this field. For some positions, university education in computer science is clearly the preferred background. For others, electrical and electronics engineers are sought. However, for a large number of positions university training is not a prerequisite. It was also indicated that for many other positions, the CAAT's do a good job of training people. Further, for some positions, individuals may only need some mathematical ability.

Given the above, the answer to shortages in the whole computer area may not lie exclusively in the expansion of university computer science programs and/or CAAT computer programs. As one institution points out:

> Depending on the nature of the perceived manpower shortage, increasing enrolment in Computer Science programs may be less appropriate than enlarging enrolment in other programs in which training in the use of computers constitutes a major portion of the curriculum. If this is the case, other programs at the University might be better candidates for expansion.

It has also been indicated to Council that in situations of high demand, it may be easier for organizations to train their own people. This may be possible for many of the positions in the whole computer-related area and may involve the upgrading of qualifications or the training of individuals with no previous related education or experience. In this connection, one university makes the following comment:

> One can... look to business and industry as 'educators' or 'trainers' in their own right. Many employers set up formal training programs to prepare new employees for the special tasks of their workplace. An extension of this philosophy with or without government aid would appear to be a quicker and less expensive way of preparing new employees to meet special work related tasks than the building of new institutions.

From all of the above, Council can only conclude that more needs to be done to determine where the demand exists in the whole computer-related area, in what areas demand is expected to grow, and what types of qualifications are and will be needed. Regarding this last point, the respective roles of the universities and of industry in training people for computer-related positions also requires further study.

Undergraduate Enrolment

COU's enrolment data for computer science programs in Ontario show marked contrasts between trends at the undergraduate and graduate levels. On an FTE basis, total undergraduate enrolment has increased by 77.5% over the past five years, from 1,645 in 1976-77 to 2,920 in 1980-81. Part-time enrolment, although it increased by almost 100% over the period, currently constitutes only 6.3% of the total. Full-time enrolment has grown by 76.2%. Projected enrolment for the next five years shows growth rates of 25% and 12% in 1981-82 and 1982-83 respectively followed by three years at a fairly low rate of growth.

Graduate Enrolment

Masters enrolment, on the other hand, has declined by slightly more than 10% over the past five years (from 187 FTEs in 1976-77 to 168 FTEs in 1980-81). Part-time enrolment has actually increased but full-time enrolment has declined. Some modest growth is anticipated over the next five years, although part-time enrolment will remain constant.

At the doctoral level, the number of FTE students has increased marginally, from 84 in 1976-77 to 86 in 1980-81. COU expects an increase in 1981-82 (to 90 FTE students) followed by four years of stable enrolment.

Capacity

In terms of available capacity, both the undergraduate and graduate levels appear to have room for a significant number of additional students. Overall, there is space for almost 200 more first-year full-time students in the system, a potential increase of 15.2%. The undergraduate capacity situation changes quite dramatically, however, on an institutional basis. Some have significant space available, some are operating at capacity and some are operating in excess of capacity.

At the graduate level, there is room for significant additional enrolment in both masters and doctoral programs. Although some programs have no additional capacity, most have some significant space and none (at either the masters or the doctoral level) are reported to be operating in excess of capacity.

CAAT Enrolment

At the college level, enrolment in computer-related programs has grown substantially. In fact, this is the area that has been expanding most rapidly in the CAAT's. The Council of Regents has provided the following examples of growth in first-year enrolment over the period 1976 to 1980: a 152% increase in two-year Computer Programming, a 160% increase in three-year Data Processing, a 173% increase in three-year Computer Programming, and a 192% increase in three-year Computer Science Technology. With regard to available capacity, however, it has been indicated that there are many applications for these programs and that available spaces are always filled.

Summary

In general, information available to Council indicates that there is currently a strong demand for computer science graduates and that this demand is likely to increase in the short-term. Council has little data, however, on which to estimate the magnitude of this demand. In terms of supply matching demand, Council notes that there is currently significant excess capacity, at all levels, in the computer science programs in the Ontario universities.

As indicated above, within the whole computer-related area, there is strong demand for individuals with a wide variety of backgrounds, such as electrical and electronics engineering, CAAT-level computer training, and no previous computer related training. Further, there are indications that industry can, and perhaps should, play a major role in training people for these positions, particularly in periods of strong demand. More needs to be done to identify the types of people needed and the roles of the universities and industry in training.

As far as the supply of graduates from the universities is concerned, programs other than computer science and electrical and electronics engineering should be considered. Many programs in science and social science have a significant computer science component. Graduates of such programs may fill, very effectively, positions which might be regarded as requiring computer science graduates. Along these same lines, it would be worthwhile to look at the extent to which engineers and scientists of various backgrounds are interchangeable.

With respect to long-term demand, Council envisions further growth in the whole computer field. However, the implications of further growth for specific positions and the demand for specific graduates will depend not only on the developing role of industry in training people but, more importantly, future technological development in the computer industry.

Clearly, more work needs to be done in assessing the demand for graduates of computer science. The forthcoming report of the provincial Task Force in Microelectronics, expected to be available in October of this year, may be helpful in this regard. If Government determines that there is a need to increase the supply of available graduates in computer science, beyond the capacity currently available, the following options could be considered.

Options for Increasing Supply

At the *undergraduate level,* although institutional capacity does not appear to be a major problem, the options discussed above in connection with engineering programs appear relevant. There are, however, important differences in relation to the computer science situation. Options designed to increase institutional capacity are only likely to prove effective if there is sufficient student demand to fill the space thus created. Current evidence suggests that such student demand does not exist, although it may increase in the future.

Government has, of course, recourse to measures which could serve to increase demand for computer science, or other programs. Differential program fees, scholarships and bursaries, and public information programs are just some of the approaches which might be adopted.

The options intended to increase the supply of available graduates, if warranted, include the following:

(a) Employment of Visa Student Graduates

Again, immediate increases in supply could be provided by retaining some visa student graduates in Canada. In 1980-81, visa students constituted 11.5% of total full-time Year IV undergraduate enrolment in computer science. If, for example, one-half of these students were granted landed immigrant status or employment visas then the immediate supply of graduates in this area would rise by some 20 students, a 6.5% increase.

(b) Visa Student Quota

There are proportionately more visa students enrolled in undergraduate computer science programs than in engineering programs. Over 19% of total full-time enrolment in computer science consists of visa students. If a quota were imposed on the number of visa students, therefore, significantly more room would be made available for Canadian and landed immigrant students (compared to the engineering example). A 5% quota, if imposed in 1982-83 on first-year full-time enrolment, would yield a potential 17% increase in Canadian and landed immigrant enrolment (about 160 full-time students).

It should be noted, however, that not all institutions would be affected equally by a quota policy. Also, the increase projected is exclusive of the potential 15% increase in total full-time enrolment represented by available capacity.

(c) Special Funding Arrangements

As with the engineering programs, changes to existing funding arrangements could be made in order to provide additional resources to allow for expansion of capacity. Such measures as full BIU funding and higher BIU weights for new computer science enrolment might be considered.

Again, it can be expected that such measures are likely to produce reasonable growth in capacity. If they were not sufficient however, additional support (particularly for equipment acquisition) might be provided through directed grants.

(d) Institutional Conversion

The variations outlined in connection with engineering apply here as well, although more rapid increases in supply could be obtained by using existing programs as a base for expansion.

At the *graduate level*, the situation closely parallels that existing in engineering in that there is substantial available capacity. Thus, increased enrolment becomes a matter of attracting more students to graduate programs rather than creating more spaces. This is true for both masters and doctoral programs generally.

The problems associated with recruitment of faculty, while similar to those found in the engineering area, are even more severe in computer science. During 1980-81, some 67 faculty positions in computer science were advertised nationally. Of these, 35 were filled and 32 (48%) remain vacant. It is evident, therefore, that any expansion at the undergraduate level will require an increased supply of doctoral (and masters) graduates.

COMMERCE AND ADMINISTRATION

Commerce and administration encompasses a broad range of sub-disciplines, including accounting, marketing, and personnel and industrial relations. Of these, accounting is perhaps the only sub-discipline that lends itself to analysis because it can be reviewed in terms of the three principal, professional designations that can be attained: Chartered Accountant (C.A.), Registered Industrial Accountant (R.I.A.) and Certified General Accountant (C.G.A.).

The Technical Service Council has published a study on accountants, *Supply of And Demand for Accounting Professionals in Canada*, which provides estimates of supply and demand for each of the accounting professionals identified above, for the period 1979-88. As in the study on engineering, the report provides low, moderate, and high demand and supply scenarios and judged the moderate to be the most likely in each case. Further, the report indicated it was important to look at total supply and total demand for these professionals. Its moderate scenario estimates indicate that total supply and demand will generally be in balance over the period.

The problem of relating this study to the demand for graduates of university accounting programs is twofold. First, as the report points out:

> ...not all accounting occupations are filled by individuals having C.G.A., C.A., or R.I.A. certifications. Some positions are filled by non-graduates, graduates with other qualifications, and by individuals who are in the process of qualifying as C.G.A.'s, C.A.'s or R.I.A.'s.

However, the report predicts that the percentage of accounting positions filled by C.A.'s, C.G.A.'s and R.I.A.'s will increase over the period. Council also notes that individuals may proceed to these professional designations from a wide range of backgrounds.

The problem of relating supply and demand may be even more acute in other areas of business. Individuals employed in business and industry in such areas as marketing, personnel and industrial relations may not necessarily have obtained their university education in these areas. In fact, such individuals may have pursued studies in the humanities, social sciences or natural sciences. One university has provided several examples of what may, at first glance, appear to be a mismatch of educational background and employment. Two such examples are as follows:a 1981 graduate with a BA in Politics is employed as a Marketing Trainee and a 1979 graduate with a BA in Philosophy obtained employment as a Hotel Management Trainee.

In this connection, one institution's submission makes the important point that university education can be looked at "as an opportunity to develop or enhance a number of basic functional transferable skills." This is a point which Council believes cannot be over-emphasized. Employers in business and industry should look at the whole pool of university graduates when considering their manpower requirements. In this way, potential "shortages" may be eliminated.

At the graduate level, Council envisions that the extent to which individuals with other undergraduate and graduate degrees can be substituted for MBA graduates is somewhat less, but is still important. At the doctoral level, it is apparent that there is a shortage of highly qualified individuals to teach in the business faculties.

Regardless of the above, Council's discussion of supply in this section cannot reasonably encompass all discipline areas. Council has, therefore, restricted its discussion to the area of commerce and administration. Council can only reiterate that these are not the only areas that should be looked at from the supply side by Government.

Undergraduate Enrolment

COU's data on commerce and administration programs in Ontario (including commerce and business, public administration, health administration, hotel and food administration and "other administration" programs) show considerable growth at the undergraduate level. Total FTE enrolment has increased from 9,698 in 1976-77 to 16,137 in 1980-81, an increase of 66.5% over the period. Moreover, between 1975-76 and 1980-81 full-time undergraduate enrolment increased by 96%. COU's projections for the next five years show, however, much lower rates of growth such that total FTE enrolment will increase by only 9.8% by 1985-86.

Graduate Enrolment

At the graduate level, past growth has been, for most programs, far less dramatic. MBA enrolment has increased by approximately 14%, from 2,035 FTE students in 1976-77 to 2,325 FTE students in 1980-81 (although enrolment in masters programs in public administration and health administration increased by over 43% during the same period). Modest growth in MBA enrolment is predicted for the next five years. Enrolment in masters programs in related areas, on the other hand, will remain fairly constant.

At the doctoral level, significant enrolment increases early in the period have been only partially offset by later declines and more modest growth rates. Total FTE enrolment has thus grown from 51 FTE students in 1976 to 68 FTE students in 1980-81. Doctoral program enrolment is expected to grow by 10% in 1981-82 (to 75 FTE students) and then remain constant.

Capacity

The capacity situation, as described by COU, is consistent at the undergraduate and masters level, but dramatically different at the doctoral level. At the undergraduate level there is space for approximately 4% more full-time students in all commerce and administration programs (although for commerce and business programs only, the figure drops to 2.7%). Even in the commerce and business area, however, there is a range of situations at the institutional level with some universities having significant space and others operating in excess of capacity. Available capacity in related programs (particularly public administration and hotel and food administration) is much higher.

At the masters level there is a similar capacity situation. In the MBA programs there is space for 5% more full-time students. Unlike the undergraduate level, however, the related programs appear to have even less available capacity (although Council feels that COU's data are incomplete in this area).

At the doctoral level, only one institution (the University of Toronto) has no available capacity. All other institutions report significant unused space.

Summary

In general, Council has seen little evidence to suggest that significant shortages of university graduates of commerce and administration programs either currently exist or are likely to develop in the near future. Indeed, at the undergraduate level, Council feels that enrolment may increase more dramatically than has been assumed by COU. Other universities could develop programs similar to the Administrative and Commercial Studies program at the University of Western Ontario. This particular program is offered by Western's Faculty of Social Science and combines general undergraduate courses with selected courses focussing on financial and administrative topics. Institutions with strength in related social science departments could, therefore, establish similar programs with greater facility than would be involved with the development of more formal business schools. Building on existing strength would also require less in the way of resource reallocation.

If more institutions were to develop such programs then enrolment in commerce and administration could expand quite rapidly. When this factor is combined with the fact that programs in commerce and administration are not the sole source of manpower for related occupations in business and industry, then a potential supply shortage becomes even less likely. The pool of potential employees in business and industry cannot be viewed as being restricted only to graduates of programs with an explicit business orientation. Rather, graduates of many other kinds of university programs have the basic skills and training which would allow them to be successful in this area.

If Government decides, however, that increases in enrolment in commerce and administration programs are desirable, then the following options appear relevant.

Options for Increasing Supply

At the *undergraduate level*, Council believes that Government would be best advised to restrict its consideration of options for increasing the available supply of graduates to the following:

(a) Employment of Visa Student Graduates

Through the retention of visa student graduates, the supply of manpower could be immediately increased. Approximately 5% of fourth-year full-time undergraduate students in business and commerce in 1980-81 were visa students. Thus, for example, retention of one-half of these students after graduation would result in a 2.6% increase (almost 50 students) in the supply of graduates.

(b) Visa Student Quota
A medium-term increase in the supply of Canadian graduates could be provided by imposing a quota on visa student enrolment. Slightly less than 10% of total full-time undergraduate enrolment in commerce and business programs consists of visa students. The imposition of a 5% quota on first-year full-time enrolment of visa students in 1982-83 would result in a potential 5% increase in Year I full-time Canadian and landed immigrant student enrolment, approximately 225 students. This would be over and above the potential increase of 3% (140 FTE students) in total first-year enrolment represented by available capacity.

As in both engineering and computer science, however, the differential effects of such a policy must be noted. Those institutions with very little, or no, excess capacity may not be affected by a quota.

The situation at the *masters level*, as has been mentioned earlier, approximates that existent at the undergraduate level. That is, significant expansion of enrolment could not likely occur without the implementation of measures designed to increase institutional capacity. However, given that there are currently 3,677 MBA students in Ontario (1,745 full-time and 1,932 part-time), and 4,034 students in all commerce and administration masters programs, Council deems it unlikely that significant increases in the supply of graduates from these programs will be warranted in the near future.

In terms of *doctoral programs*, the situation is similar to that in engineering and computer science, save that the degree of available capacity is twice that of engineering and more than three times that of computer science. Therefore, measures designed to attract more students, such as the targeted graduate scholarship program suggested above, would be required.

GENERAL SUMMARY

Council has evaluated the balance between supply and demand, both current and potential, on the basis of available information. The type of situation existing in a particular discipline (or sub-discipline) area at a specific point in time, in terms of either undergraduate or graduate programs, depends greatly on the perceptions and assumptions used in the evaluative process. For these reasons, Council finds itself reluctant to offer definitive advice concerning the future balance between supply and demand in any of the discipline areas, but does offer some general impressions.

Relating current or potential shortages to possible remedial action is, of course, a different matter. In each of the sections relating to initiatives which might be undertaken to increase the future supply of graduates ("Options for Increasing Supply"), Council has quite consciously structured its consideration on the basis of the perceived time-frames required for implementation. In addition, there appears to be a relationship between "lead time" and additional capacity generated. In effect, short-term measures produce, relatively speaking, incremental changes, while longer-term action results in significant potential additional enrolment.

The various options outlined for increasing the supply of manpower from undergraduate programs may be summarized as follows:

(a) *Employment of Visa Student Graduates:* is a short-term measure which could be implemented almost immediately.

(b) *Visa Student Quota:* is a medium-term initiative (it could not effectively be implemented until 1982-83 and would not "work through the system" until 1985 at the earliest), but has the potential to produce an increase in Canadian and landed immigrant enrolment.

(c) *Special Funding Arrangements:* would likely be medium-term measures which would not be fully effective until 1985, but could provide opportunities for significant increases in capacity.

(d) *Institutional Conversion:* despite the variations identified, is definitely a long-term option, but would result in a large potential increase in qualified manpower. Council is convinced, however, that this option should only be seriously entertained if Government is firmly convinced that a large and continuing increase in the supply of graduates is required; one that cannot be met more effectively by increasing capacity at an existing institution.

It should be noted, however, that increasing available capacity may not result in increases in qualified manpower unless more Canadian and landed immigrant students are attracted into certain undergraduate programs. Similarly, at the graduate level generally, the problem to be addressed involves the lack of student demand rather than the need for additional capacity. In both cases, initiatives to increase student demand, particularly financial incentives, might be warranted. This is particularly important in terms of the graduate area if the future supply of qualified faculty is to be assured.

Council believes that the ability and willingness of the university system to accommodate student demand and to respond to perceived manpower needs should be fully recognized. Their "track record" in this respect is excellent.

W.C. Winegard
Chairman
July 17, 1981

81-VI Review of the Institutional Funding Weights for Ryerson Polytechnical Institute

On February 5, 1981, the President of Ryerson Polytechnical Institute wrote to the Minister of Colleges and Universities concerning "the fundamental question of the basis on which Ryerson's provincial grant is calculated". In his letter, the President argued that Ryerson suffered from inequitable treatment in this area, "as compared to the treatment afforded universities in situations parallel to (the Institute's)". He noted that the Ontario Council on University Affairs had recognized, in Advisory Memorandum 79-V, that enrolment shifts within the Institute "did not automatically result in a higher average funding weight since Ryerson is funded according to an institutional weight". He pointed out, however, that while, on the basis of Council's recommendation, Ryerson's institutional weight had been increased from 1.3 to 1.38 (effective 1980-81) for the moving average, this increase had not been applied to the base years.

The President then went on in the letter to provide data which suggested that "most of the change in enrolment mix" had occurred during the base years period (1974-75 to 1976-77). He argued that the base years should have been included in considering changes to Ryerson's institutional weight since a "university which had experienced changes in enrolment weight category would have had its BIU's adjusted in the base years when the change took place". On this basis, the President concluded with the following:

> ... I earnestly request that serious consideration be given to applying the weight of 1.38 to the base years' enrolment as well as the moving years' average enrolment for 1981-82 and for all future years in calculating Ryerson's formula grant entitlement.

On February 26, 1981, the Minister sent a copy of the President's letter to the Chairman of Council asking for "comments and advice".

Council's Analysis

In order to determine the effects of the shifts in enrolment which had taken place at Ryerson during the period of the base years, Council began by reviewing the data and methodologies used to identify an institutional weight of 1.38.

In Advisory Memorandum 79-V, Council attempted to assess (and calculate) the financial impact of the enrolment shifts by examining two "benchmark" years (1973-74 and 1978-79) in terms of:

a) the relative split between degree and non-degree enrolment, and

b) the proportion of degree enrolment in higher-cost (i.e., higher-weighted) programs.

Council calculated hypothetical institutional weights on the basis of seven alternative models which used certain average degree and non-degree weights. The results (see Appendix A) led Council to recommend that "beginning in 1980-81, formula grants for Ryerson... be calculated on the basis of an institutional weight of 1.38 applied to the three-year moving average" (OCUA 79-15).

Council did not, in Advisory Memorandum 79-V, consider the question of revising the institutional weight which applied to enrolment in Ryerson's funding base. Rather, Council attempted to determine an appropriate institutional weight for Ryerson on the basis of the current (i.e., 1978-79) enrolment "mix" in comparison with the enrolment mix existent in 1973-74 (when the previous institutional weight of 1.3 was established). The data used in the model calculations, obtained either from the University Audit Reports (UAR) or provided directly by Ryerson, pertained only to the two benchmark years.

In the process of reviewing the data used at the time Advisory Memorandum 79-V was written (November, 1979), Council discovered a number of problems relating to the figures used in calculating the models, especially those relating to the split between degree and non-degree enrolment in both 1973-74 and 1978-79.

In general, Ryerson has three types of programs: diploma or certificate (i.e., non-degree) programs, degree programs and sequential non-degree/degree programs. Most of the sequential programs consist of a three-year diploma program followed by a one-year degree program. After completing the three-year diploma program, qualified students, if they so desire, may then proceed to the one-year degree program. Enrolment in such sequential programs has usually been reported on the basis that enrolment in the first three years (the diploma component) constituted non-degree enrolment while enrolment in the fourth year (the degree component) was reported as degree enrolment.

The problems with the data which have been identified include the following:

a) some non-degree enrolment has been erroneously counted for certain degree programs,

b) when a program was converted from diploma to degree, total program enrolment was sometimes counted as degree enrolment only during the "phase-in" period (when both diplomas and degrees were awarded), and

c) in certain instances, enrolment in specific sequential programs, which were viewed by the Institute as primarily degree programs but with an "opt-out diploma" feature, was reported as totally, or primarily, degree enrolment.

Consequently, Council has revised the data pertaining to the two benchmark years (see Appendix B).

If the models used in Advisory Memorandum 79-V had been calculated using the revised data, the results would have been quite different (see Appendix C). In fact, it is likely that Council would have recommended an institutional weight for Ryerson of 1.35 rather than 1.38.

In addition to the changes noted for the benchmark years, Council has, with the aid of Ryerson staff, developed what it feels to be accurate and consistent data pertaining to the Institute's enrolment patterns during the period covered by the base years. Also, Ryerson has provided similar enrolment data for the two most recent years for which such information is available, 1979-80 and 1980-81.

Changing the Base Weight

Currently, Ryerson's formula funding base consists of the full-time equivalent (FTE) enrolment in 1974-75 and 1975-76 and the fiscal full-time equivalent (FFTE) enrolment in 1976-77, multiplied by an institutional weight of 1.3 and averaged over the three years. This weight factor was originally established by the Committee on University Affairs, in February 1974, to take effect for 1975-76 (under the old slip-year funding system).

In principle, the argument presented by Ryerson concerning the funding base is correct if the Institute experienced significant internal enrolment shifts between programs during the period covered by the base years. The application of an institutional weight for funding purposes, as opposed to specific program weights, does have the effect of masking, or at least not recognizing, such changes. For institutions on program weights (virtually all institutions within the system), enrolment shifts during the base years have had a direct impact on current institutional funding since greater enrolment in higher-weighted programs resulted in the counting of more BIUs. In fact, in 1975-76 the total number of undergraduate BIUs reported by the system increased by 4.4% over 1974-75 (to 323,637.1 from 309,880.1) even though the number of undergraduate FTEs increased by only 3.9% (from 183,959.0 in 1974-75 to 191,137.3 in 1975-76).[1] The additional 0.5% increase in BIUs was the result of shifts in enrolment "mix" towards higher-weighted programs.

Council has attempted to assess the effects of enrolment shifts at Ryerson during the base years. As was mentioned above, for the first time, accurate and consistent data pertaining to each of the years contained in the funding base (1974-75, 1975-76 and 1976-77) were obtained. These data, and the revised data pertaining to the benchmark year 1973-74, were then applied to the seven models used in Advisory Memorandum 79-V.[2] The results (see Appendix D) suggest the following institutional weights:

a) for 1974-75 : *1.33*,

b) for 1975-76: either *1.33* or *1.34*, and

c) for 1976-77: *1.35*.

Council concurs, therefore, with Ryerson's argument that there has been an element of inequity in terms of the weighting assigned to the Institute's enrolment for the period covered by the formula funding base. Accordingly, based on the calculations noted above, and Council's judgement of the changes in overall operating costs reflected by shifts in enrolment to higher-cost programs, Council *recommends to the Minister:*

> *OCUA 81-II*
> *INSTITUTIONAL FORMULA WEIGHT FOR RYERSON POLYTECHNICAL INSTITUTE'S FORMULA FUNDING BASE*
>
> *THAT* beginning in 1981-82, formula grants for Ryerson Polytechnical Institute be calculated on the basis of an institutional weight of 1.34 applied to the three years (1974-75, 1975-76 and 1976-77) that comprise the formula funding base.

Changing the Moving Average Weight

As was noted above, if Advisory Memorandum 79-V had incorporated the revised enrolment data for the two benchmark years (1973-74 and 1978-79), then the institutional weight identified by Council would likely have been 1.35 rather than the 1.38 actually recommended. However, Council now has access to information concerning Ryerson's enrolment mix in two more recent years, 1979-80 and 1980-81. The application of the seven models contained in Advisory Memorandum 79-V to these data (see Appendix D) implies the following institutional weights:

a) for 1979-80 : *1.34*, and

b) for 1980-81: *1.36*.

Based on these calculations, Council's judgement of the changes in overall operating costs reflected by shifts in enrolment to higher-cost programs for the years 1978-79 to 1980-81, and the likely results for 1981-82, Council *recommends to the Minister:*

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[1] Source: Ministry of Colleges and Universities (UAR).

[2] For a detailed description of each of the seven models, see the Appendix to Advisory Memorandum 79-V.

OCUA 81-12
INSTITUTIONAL FORMULA WEIGHT FOR RYERSON POLYTECHNICAL INSTITUTE'S THREE-YEAR MOVING AVERAGE

THAT beginning in 1981-82, formula grants for Ryerson Polytechnical Institute be calculated on the basis of an institutional weight of 1.36 applied to the three years that comprise the moving average.

Implications for Funding

Council considers it appropriate that the level of funding for Ryerson in 1981-82 be calculated on the basis of the new institutional weights contained in Recommendations OCUA 81-11 and 81-12. However, Government has already responded to Council's recommendations concerning the level of operating support for the university system in 1981-82, contained in Advisory Memorandum 81-II.

Council estimates that the application of the institutional weights recommended above would have the net effect of increasing Ryerson's funding BIUs from 14,140.535 to 14,235.775, an increase of 95.240 BIUs or 0.7%, for 1981-82. On this basis, Council calculates that Ryerson would have been eligible to receive $40.66 million in formula operating grants for 1981-82, rather than the $40.36 million allocated as a result of Advisory Memorandum 80-VI, if the weights had been in place at the time that memorandum was written.

Accordingly, Council *recommends to the Minister and Lieutenant Governor in Council:*

OCUA 81-13
ADDITIONAL FUNDS REQUIRED FOR THE UNIVERSITY SYSTEM IN 1981-82 IN RECOGNITION OF THE INSTITUTIONAL WEIGHT CHANGES FOR RYERSON POLYTECHNICAL INSTITUTE

THAT in recognition of the changes in the formula weights for Ryerson Polytechnical Institute from 1.3 to 1.34 for the funding base and from 1.38 to 1.36 for the three-year moving average, additional operating grants to the university system for 1981-82 in the amount of $300,000 be made available in addition to the funds already provided by Government in response to Advisory Memorandum 80-II, such funds to form part of the continuing system base.

W. C. Winegard
Chairman
September 25, 1981

ADVISORY MEMORANDUM 79-V

SUMMARY OF MODELS

Model	Degree Weight	Source	Non-degree Weight	Source	Resulting Percentage Increase	New Institutional Weight
I	1.494	derived GMW composite undergraduate weight	1.253	derived by using the GMW composite degree weight	4.1	1.35
II	1.527 (73/74) 1.593 (78/79)	formula weights for comparable university programs	1.200	formula weights for university technology diploma programs	7.9	1.40
III	1.527 (73/74) 1.593 (78/79)	formula weights for comparable university programs	1.253	derived by using the GMW composite degree weight	6.8	1.39
IV	1.527 (73/74) 1.593 (78/79)	formula weights for comparable university programs	1.289	derived by the GW composite degree weight discounted by 10% for research	6.1	1.38
V	1.527 (73/74) 1.593 (78/79)	formula weights for comparable university programs	1.242	derived by using the GW composite degree weight	7.0	1.39
VI	1.527 (73/74) 1.593 (78/79)	formula weights for comparable university programs	1.298	derived by the GW composite degree weight discounted by 15% for research	5.8	1.38
VII	1.374 (73/74) 1.434 (78/79)	formula weights for comparable university programs discounted by 10% for research	1.289	derived by the GW composite degree weight discounted by 10% for research	3.3	1.34

Appendix B

NET EFFECTS OF DATA CHANGES ON BENCHMARK YEARS

1973-74

A) FTEs	A.M. 79-V	CURRENT	DIFFERENCE
Non-degree	7,236.6	7,090.9	- 147.7
Degree	1,748.9	1,894.6	+ 145.7
	8,985.5	8,985.5	-----

B) %DISTRIBUTION	A.M. 79-V	CURRENT	DIFFERENCE
Non-degree	80.536	78.915	- 1.621
Degree	19.464	21.085	+ 1.621
	100.000	100.000	-----

C) AVERAGE DEGREE WEIGHT	FTEs	BIUs	AVERAGE WT.
A.M. 79-V	1,748.9	2,670.1	1.527
Current	1,894.6	2,945.15	1.554

1978-79

A) FTEs	A.M. 79-V	CURRENT	DIFFERENCE
Non-degree	6,191.4	7,232.8	+1,041.4
Degree	4,425.7	3,385.0	-1,041.7
	10,618.1	10,617.8	- 0.3

B) % DISTRIBUTION	A.M. 79-V	CURRENT	DIFFERENCE
Non-degree	58.310	68.119	+ 9.809
Degree	41.690	31.881	- 9.809
	100.000	100.000	-----

C) AVERAGE DEGREE WEIGHT	FTEs	BIUs	AVERAGE WT.
A.M. 79-V	4,426.7	7,051.2	1.593
Current	3,385.0	5,494.4	1.623

EFFECTS ON ADVISORY MEMORANDUM 79-V MODELS USING REVISED DATA

SUMMARY OF MODELS

Model	Degree Weight	Source	Non-degree Weight	Source	Resulting Percentage Increase	New Institutional Weight
I	1.494	derives GMW composite undergraduate weight	1.248	derived by using the GMW composite degree weight	2.0	1.33
II	1.554 (73/74) 1.623 (78/79)	formula weights for comparable university programs	1.200	formula weights for university technology diploma programs	4.7	1.36
III	1.554 (73/74) 1.623 (78/79)	formula weights for comparable university programs	1.248	derived by using the GMW composite degree weight	4.2	1.35
IV	1.554 (73/74) 1.623 (78/79)	formula weights for comparable university programs	1.288	derived by the GW composite degree weight discounted by 10% for research	3.8	1.35
V	1.554 (73/74) 1.623 (78/79)	formula weights for comparable university programs	1.237	derived by using the GW composite degree weight	4.3	1.36
VI	1.554 (73/74) 1.623 (78/79)	formula weights for comparable university programs	1.298	derived by the GW composite degree weight discounted by 15% for research	3.7	1.35
VII	1.399 (73/74) 1.461 (78/79)	formula weights for comparable university programs discounted by 10% for research	1.288	derived by the GW composite degree weight discounted by 10% for research	2.5	1.33

Appendix D

SUMMARY OF MODEL RESULTS

MODEL	BASE YEARS			1978-79		1979-80	1980-81
	1974-75	1975-76	1976-77	AM 79-V	Revised		
I	1.31	1.32	1.33	1.35	1.33	1.33	1.33
II	1.34	1.34	1.37	1.40	1.36	1.36	1.37
III	1.33	1.34	1.36	1.39	1.35	1.35	1.37
IV	1.33	1.34	1.35	1.38	1.35	1.34	1.36
V	1.33	1.34	1.36	1.39	1.36	1.35	1.37
VI	1.33	1.33	1.35	1.38	1.35	1.34	1.36
VII	1.32	1.32	1.33	1.34	1.33	1.33	1.34
Average	1.327	1.333	1.350	1.376	1.347	1.343	1.357
Median	1.33	1.34	1.35	1.38	1.35	1.34	1.36

81-VII Graduate Program Planning

Over the past several years, Council's concern about graduate program planning has intensified. Even in a time of financial restraint, means must be found to ensure that the universities of Ontario, individually and collectively, are able to respond to the needs of Ontario and Canada in this important endeavour.

While graduate students in Ontario make up only 9.4% of the total full-time equivalent enrolment in the university system, graduate programs represent a substantial investment in public funds. For 1981-82, provincial graduate formula grants from government totalled 20.6% of total university formula grants, or roughly $186 million. In addition, the 693 graduate programs in the province have a significant steering effect on the system as a whole, and on the system's progress toward "rationalization" and "role differentiation". It should not be surprising, therefore, that Council has been, and continues to be, concerned about such matters as program quality, possible program duplication and the introduction of new graduate programs.

In this memorandum, Council briefly reviews developments in graduate program planning since 1976; describes recent exchanges between Council and the Council of Ontario Universities (COU); announces the formation of an Academic Advisory Committee of Council, which will assist Council in assessing graduate programs; and identifies matters for continuing discussion.

REVIEW OF RECENT HISTORY

In Advisory Memorandum 76-IV, Council advanced the concept of a quinquennial approach to graduate planning. Council's objectives for the first planning quinquennium, 1979-80 through 1983-84, were enunciated in Advisory Memorandum 77-VII, which was submitted in February, 1978:

1. Recognition and protection of outstanding doctoral programs:
2. Support of good quality graduate programs;
3. Elimination of graduate programs of unsatisfactory quality;
4. Prevention of further duplication of graduate programs;
5. Recognition of high quality graduate programs in new fields of study for which there is a genuine need;
6. Maintenance of a satisfactory amount of scholarship and research activity in the university system.

In the same memorandum, Council stated the criteria which it would apply during the first quinquennium in determining whether to recommend to the Minister that a new graduate program be funded:

1. Evidence of need in Ontario and Canada to be provided by the Advisory Committee on Academic Planning and endorsed by the Council of Ontario Universities;
2. Certification from the Advisory Committee on Academic Planning through the Council on Ontario Universities that no similar program in the field(s) proposed is available in Ontario.(In exceptional circumstances Council may be willing to entertain a recommendation from ACAP through COU for funding a master's program where there is a similar program in Ontario but where there is also strong evidence of regional importance and student demand);

3. Certification from the Advisory Committee on Academic Planning through the Council of Ontario Universities that the proposed program has passed a rigorous appraisal and at the time of appraisal was not found to require improvements;
4. Certification from the institution that admissions to the program commenced prior to its being proposed for funding consideration.

In addition, Council warned that:

> ...funding approval for new graduate programs would no longer be an automatic matter and that Council's own task in the funding approval process would include the "balancing of fiscal realities and new initiatives".

On March 21, 1978, the Minister accepted Advisory Memorandum 77-VII.

In Advisory Memorandum 78-III, Council dealt with COU's 1978 brief to Council, *Graduate Planning in Ontario Universities.* It contained a list of 68 new graduate programs which, at the time, were being offered or proposed by the universities but were not receiving government formula funding grants. Council decided to recommend that 26 of these programs should receive formula grants as they had satisfied all of the criteria for government funding which had been in effect prior to the announcement, as of March 21, 1978, of Council's new funding criteria.Two of the remaining 42 programs were proposed doctoral programs in Business. Council decided to defer making any recommendations regarding these programs until COU provided it with "plans for doctoral studies in Business in Ontario" and its view as to "how these plans fit in with the objectives for the first quinquennium". These two programs would have been in addition to three existing programs in Business, and so the question Council had to ask was "how many doctoral programs in Business are really needed in Ontario, and where should they be?" This matter is still before COU.

The remaining 40 unfunded programs had not satisfied the pre-March 21, 1978 criteria for government funding. Council decided that these 40, plus any new graduate programs proposed in the future, should be subjected to the funding criteria set out in Advisory Memorandum 77-VII.

It should be noted that Council's formulation of explicit objectives and criteria for the graduate system in Ontario grew out of Council's concern about the need for institutional role differentiation and rationalization among Ontario universities. In Advisory Memorandum 77-VII, Council summarized its thinking in this area:

> Over the years there has been much discussion of institutional role differentiation and rationalization.The new era of straitened resources and declining graduate enrolments and the accompanying need for system-wide consolidation should encourage institutions to identify and give priority to the areas of graduate endeavour in which strength exists and which are key to the planned institutional identity.
>
> The success of the graduate planning enterprise during the first quinquennium will be primarily dependent upon the pursuit of excellence by institutions in their areas of strength, and, of system rationalization by the university collectivity on the basis of quality and need.

There was considerable discussion within COU during 1978 and 1979 concerning Council's new funding criteria. In a letter to COU, dated October 30, 1979, Council reminded COU that satisfaction of the funding criteria would not necessarily guarantee a recommendation from Council for formula funding.The letter went on to state that:

Council needs assurance from COU, that from the viewpoint of 'a system on the brink', the program should be offered despite financial constraint. In this connection, and consistent with the goal of system rationalization, Council would like to be assured by COU that the particular institution could best offer the program and that the program is consistent with the aims, objectives and existing strengths of the institution. Such assurances are of great importance if Council's criteria are to be applied with a sense of perspective whereby, for example, a particularly desirable program might be funded even if a precise impression of external demand cannot be confirmed.

In September of 1979, COU forwarded to Council a list of ten new graduate programs (drawn from the previous 1978 list of new programs), which it felt should receive Government funding. Council referred back the list of ten programs because of "insufficient information", on which to base its funding recommendations and COU was invited to resubmit the programs by January 10, 1980. Nine of the ten programs were resubmitted, but COU expressed the view that it was "premature" for it to address the question of institutional appropriateness given that the new funding criteria would be discussed at Council's 1980 Spring hearings.

In Advisory Memorandum 79-VII, Council accepted COU's reason for not commenting on the question of institutional appropriateness, but made clear its expectation that in future:

> ...each graduate program funding proposal forwarded to Council will include COU's assurance that the program should be funded despite restraint and also that the program is consistent with the aims, objectives and existing strengths of the particular institution. At present, Council is satisfied with the developments that have taken place and has assessed the nine funding proposals in this context.

Council recommended that the nine new programs be funded. The universities and COU were thereby given a year of grace in terms of satisfying the new funding criteria.

In August, 1980, COU forwarded proposals for six new graduate programs (which also had appeared previously on COU's 1978 list) and once again declined to comment on the question of "institutional appropriateness". COU felt that the provision of such commentary would still be "premature". Since COU did not state explicitly that it was incapable of ever being able to provide the requisite assurance of institutional appropriateness, Council found itself in a difficult position. The issue of COU's ability to provide the required commentary on institutional appropriateness had to be resolved. Until this was done, Council decided (Advisory Memorandum 80-V) that the best course of action was not to recommend formula funding approval for any of the six programs, but to open the possibility of considering them again when current uncertainties had been resolved.

In August, 1981, COU proposed another new program for formula funding (one that had not been on the 1978 list) - a doctoral program in Veterinary Science (DVSc) at the University of Guelph. Despite Guelph's well-established and unique involvement in the area of veterinary studies, COU once again declined to comment on the question of institutional appropriateness. This marked the third time in as many years that COU had declined to judge the appropriateness of a program in relation to the aims, objectives and existing strengths of one of its member institutions.

REPORTS AND RESPONSES

While an impasse was developing between Council and COU with regard to the application of program funding criteria, progress was taking place on other fronts. Council now believes that many of the issues and problems which have arisen in graduate planning over the past few years are on their way to being resolved.

The COU Special Committee to Review Graduate Planning issued a *Discussion Paper* in June, 1980 and a *Final Report* in March, 1981. In September of 1980, Council issued *System Rationalization,* which included a section setting out a "sectoral approach" to graduate planning. These three reports, along with the report of the Committee on the Future Role of Universities in Ontario (CFRUO) have played a positive role in promoting the development of a more rational and effective approach to graduate program planning. Among other things, all four reports stressed the need for coordinating system-wide graduate program planning, and for clearly defining the respective roles of COU and OCUA in this area.

The *Final Report* of COU's Special Committee to Review Graduate Planning provided specific recommendations concerning the future of graduate planning in the Ontario system. COU, in June, 1981, adopted all of the report's major recommendations.

A New Appraisals System

One of the most important of these recommendations concerned the establishment of a new appraisals system. Under the new system, all existing programs, within the context of overall discipline appraisals, will be reviewed by the Appraisals Committee. The Appraisals Committee will review each program and discipline by examining sets of uniform data submitted by each university. Then those programs judged not to be "sufficiently strong" will be subjected to "full appraisals", involving studies and reports by teams of expert consultants. A full appraisal will also be required for any proposed new program; programs that have not previously undergone an appraisal or that have not been part of a discipline assessment; and programs which previously had been questioned during the course of a discipline assessment to the extent that they were subsequently subjected to an appraisal during which further concerns were raised. The new system will guarantee that all programs are reviewed at least once every five years.

Another major change in the appraisals area involves the respective roles of the Appraisals Committee and its appointed consultants. In the past, the consultants made recommendations concerning whether or not a program should be continued. Under the new system, the consultants will present a report to the Appraisals Committee, but will not make any recommendations concerning the continuance of the program. Such recommendations will be the responsibility of the Appraisals Committee, acting on the facts presented in the reports of the consultants. COU's Ontario Council on Graduate Studies (OCGS) may challenge decisions of the Appraisals Committee, but only on matters related to procedure.

Council expects that the new appraisals procedures will have sufficient academic rigour so that they can be relied upon as indicators of quality. For its part, Council will take account of the results of the appraisals procedures when making recommendations to the Minister concerning graduate programs.

Master's Programs in Central Disciplines
The COU Special Committee to Review Graduate Planning recommended, and COU agreed, that master's programs in "central disciplines" should, in order to qualify for funding, be subject only to Council's quality criterion and so should be exempt from other funding criteria. In light of the current climate of financial restraint, the possible restructuring of the university system, and the commitment of Council and the Minister to the concept of institutional role differentiation and rationalization, Council is not prepared, at the present time, to recommend that controls should be relaxed for new program initiatives at the master's level.

The Sectoral Approach
COU endorsed the Special Committee's proposal that the development of the "sectoral approach" to graduate planning be pursued through discussion with representatives of Council. The "sectoral approach", as discussed in *System Rationalization*, is designed to facilitate and encourage institutional role differentiation and provides some institutional flexibility in graduate program planning. The approach involves the development of indicators of institutional strengths. In *System Rationalization*, Council used only one such indicator-doctoral enrolment levels. Council realized that enrolment was only one of many indicators that could be utilized and that the sectoral approach needed considerable refinement.

COU has now recognized the potential value of the sectoral approach. Representatives of Council and of COU are currently engaged in some useful discussions concerning refinement of the approach, the results of which are expected by the end of the year.

Roles of COU and OCUA
In the concluding sections of its *Final Report*, the COU Special Committee dealt with the respective roles of COU and Council, stating that:

> Experience has shown that COU, given its nature, being representative of the institutions, cannot effectively deal with the review of programme proposals according to a set of planning criteria which it has not established itself. In particular, COU should not be expected to deal with the question of role definition of its member institutions. In these matters, COU's role should be restricted to offering general advice to OCUA, which properly has the responsibility to recommend to government with respect to them.[1]

This position was endorsed by COU at its meeting in June, 1981.

Further, COU agreed with its Special Committee that Council should establish an Academic Advisory Committee. As a result of adopting the Special Committee's proposal concerning a new appraisals system and in anticipation of Council establishing an Academic Advisory Committee, COU disbanded its own Advisory Committee on Academic Planning (ACAP). In August, 1981, the Committee on the Future Role of Universities in Ontario joined COU in endorsing the concept of Council having an Academic Committee.[2]

Council has often stated that it would prefer that the university system be self-regulating with regard to graduate program planning. It has become evident, however, that because COU is a voluntary organization it is unable to carry out all of the necessary and urgent tasks required in the area of graduate program planning. COU has decided that in this area it is going to restrict itself to the "operation of the appraisals system (through the Ontario Council on Graduate Studies), and a broad planning and monitoring role (through a new Committee on Graduate Planning)".[3] Therefore, primarily in order to assist Council with such matters as the question of institutional appropriateness and the application of Council's funding criteria for new graduate programs, Council is establishing an Academic Advisory Committee.

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[1] COU Special Committee to Review Graduate Planning, *Final Report*, March 1981, p. 16.

[2] CFRUO, *Report*, August 1981, p. 32.

[3] *Final Report*, p. 16.

ACADEMIC ADVISORY COMMITTEE

This Committee, which will be operational early in 1982, is to be appointed by Council, and will be composed of seven members broadly representative of various discipline sectors. No member of Council will be eligible to serve on the Committee. The Committee will advise Council on any and all matters referred to it by Council, including:

- monitoring COU's new appraisals system.
- reviewing proposals for new graduate programs in light of Council's funding criteria (see Advisory Memoranda 77-VII, 79-VII, and 80-V).
- reviewing proposals for new undergraduate professional programs (see Advisory Memoranda 77-V and 80-IV).
- reviewing COU's annual compilation of doctoral program macro-indicators (which continue to be of invaluable assistance to Council).

The Committee will report to Council, which may accept or reject, in whole or in part, any advice rendered by the Committee.

Conclusion

Council believes that the roles of COU and Council in the area of graduate program planning have now been clearly defined. Accordingly, the seven new graduate programs which COU has recommended to Council for consideration will be examined by Council's Academic Advisory Committee.

W. C. Winegard
Chairman
November 20, 1981

81-VIII Response to the Report Concerning Full-Time University Education in Orillia

On October 16, 1981, the Minister of Colleges and Universities submitted to Council the *Report of the Committee to Review Alternate Ways and Means of Providing Full-Time University Education in Orillia* and asked for Council's "comments on the report's recommendations". Council has reviewed the Committee's report, along with various responses received by the Ministry from interested organizations. Council now provides the following comments and recommendation.

In general, Council views the arrangements outlined in the Committee's report with apprehension. The evidence is not clear that there would be a significant number of students in the Simcoe County area who would wish to attend university on a full-time basis and would choose not to attend full-time at one of the existing universities. Furthermore, the report does not address the possibility of a more co-ordinated approach, building on the combined strengths of Wilfrid Laurier University, York University, and perhaps other institutions, as a more effective approach to the provision of university-level education in the Simcoe County area.

For the most part, Council views the Committee's recommendations[1] as tentative "articles of agreement" among York University, Georgian College and the Simcoe County Foundation, and thus has no comment on these recommendations at this time. Recommendation 8., however, specifically requests that the Ministry "provide a special non-recurring grant of $30,000" for the purchase of library materials by York University.

Council supports, in principle, initiatives directed towards the provision of university-level education for individuals not geographically proximate to an existing university campus. In considering any such initiatives, however, it is important that the following criteria be applied:

a) that the offering of courses by an individual institution will be consistent with the concept of system rationalization,

b) that there will be extensive and effective co-operation and co-ordination between or among universities, and other educational institutions, offering courses in the same geographic area, and

c) that financial support will be based on the current funding mechanisms for the universities of Ontario.

In view of the principles enunciated above, and the fact that Wilfrid Laurier University already provides significant library resources in Simcoe County[2] to service its extensive course offerings in that area, Council does not support Recommendation 8. Furthermore, Council acknowledges the point made by Dr. G. Connell, in his letter on behalf of the Council of Ontario Universities,[3] that such a grant "would clearly raise expectations for similar treatment" on the part of other communities.

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[1] Committee to Review Alternate Ways and Means of Providing Full-Time University Education in Orillia, *Report*, September 1, 1981, pp. 11-13.

[2] Wilfrid Laurier University, *Response from Wilfrid Laurier to the Report of the Committee to Review Alternate Ways and Means of Providing Full-Time University Education in Orillia*, November 11, 1981, p. 8.

[3] Letter from Dr. G. E. Connell to Minister of Colleges and Universities, November 9, 1981.

Accordingly, Council *recommends to the Minister:*

> *OCUA 81-14*
> *GRANT TO PURCHASE BOOKS FOR A UNIVERSITY LEVEL LIBRARY TO BE LOCATED IN ORILLIA*
>
> *THAT* a special non-recurring grant of $30,000 to purchase the books required for a university level library to be located in Orillia NOT be provided.

W. C. Winegard
Chairman
December 11, 1981

81-IX The Allocation of the Government's Operating Support for the University System in 1982-83

The Minister of Colleges and Universities informed Council on February 18, 1982 that, for 1982-83, $1,036.167 million in operating grants will be made available for the university system. Of this amount, $1,029.792 million is available for Council's basic funding objectives and the grant-in-aid for the Bar Admission Course. The remaining $6.375 million is retained by the Ministry of Colleges and Universities for line budget items.

In addition to the operating grants announcement, the Minister also announced that formula fee rates for domestic students will increase by 12.2%. If this domestic formula fee rate increase is applied to Council's estimate of total student enrolment in 1982-83, it will yield an estimated $25.855 million in additional formula fee revenue. In addition, however, formula fee rates for new foreign student registrants (as of September 1, 1982) will increase by more than 12.2%. Fees for new foreign student registrants enrolled in programs with a formula weight of 1.5 or less will increase from the present $1,773 to $2,700, while the two-term fees for new foreign student registrants enrolled in all other programs will increase from $1,773 to $4,400. The Ministry of Colleges and Universities estimates that, as a result of that portion of the increased foreign student fees which is in excess of 12.2%, the university system will receive a further $4.0 million in additional revenue in 1982-83.

Based on the above estimates of the increase in formula and foreign student fee revenue and an estimated 2% increase in enrolment, total grant and fee revenue accruing to the university system in 1982-83 is expected to equal $1,258.622 million,[1] representing a 12.8% or $142.522 million increase in funding for the system from these two sources over 1981-82. It should be noted that the $1,029.792 million in operating grants designated for Council's basic funding objectives, combined with the estimated formula and foreign student fee increase of $29.855 million, falls $20.953 million short of Council's basic funding objectives and $32.153 million short of Council's total recommendation for operating support of $1,344.3 million ($1,333.1 million for basic funding objectives; $1.2 million for the grant-in-aid for the Bar Admission Course and funding of existing bilingualism programs; and $10.0 million for additional funds for equipment and library acquisitions).

This memorandum outlines Council's advice on the distribution of the $1,029.792 million that has been made available for operating grants. Included are recommendations for the allocation of differentiation grants, Northern Ontario grants, bilingualism grants, supplementary grants, the grant-in-aid for the Bar Admission Course, a provision for final enrolment adjustment and the distribution by formula of the funds remaining after the above allocations.

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1. This amount does not include any revenue that would accrue to the universities should they decide to exercise their freedom to charge tuition fees up to 10% above formula fee rates.

Differentiation Grants

In Advisory Memorandum 80-VI, Council introduced differentiation grants as a new category of extra formula funding for institutions that accept a clearly differentiated role, also demonstrate their intention to pursue their strengths efficiently and effectively, and require special funding to do so. Council also made it clear that the renewal or continuation of such a grant would depend entirely on the progress the institution makes towards attaining its goals over the period for which the grant is awarded.

In 1981-82, Trent University became the first recipient of a differentiation grant in recognition of its distinct character as the only institution in the Province engaged almost entirely in undergraduate Arts and Science instruction. At that time, Council emphasized that the renewal of this grant beyond 1981-82 was conditional upon Trent continuing to search for more efficient ways of carrying out its role as a primarily undergraduate Arts and Science institution and making evident progress toward the pruning and consolidation of its graduate offerings.

Council believes that Trent is taking appropriate steps to enhance its role. For example, in the past year, Trent has demonstrated significant progress in the modification of its graduate program offerings. Programs in Physics, Chemistry and History have been withdrawn and, appropriately, in the area of Canadian studies plans are underway to develop a multi-disciplinary program.

In terms of Trent's making progress toward a mode of operation more closely aligned to available resources, Council notes with approval the determination of the Board of Governors to eliminate the accumulated deficit within a reasonable time-period. In view of the actions already taken by Trent, its continuing search for more efficient ways of carrying out its role as a primarily undergraduate Arts and Science institution, and its plans to prune and consolidate its graduate offerings, Council accordingly *recommends to the Minister:*

> *OCUA 81-15*
> *DIFFERENTIATION GRANT FOR TRENT UNIVERSITY 1982-83*
>
> *THAT* a differentiation grant of $1,400,000 be made to Trent University in 1982-83.

In making the above recommendation, Council emphasizes, once again, that the award of a differentiation grant to Trent University in 1983-84 will depend upon the provision of firm evidence that the institution is continuing to make progress towards the objectives outlined above.

Northern Ontario Grants

Council indicated in Advisory Memorandum 80-VI that it anticipated undertaking a thorough review of the Northern Ontario grants during 1981-82.

While Council did not undertake such a review in 1981, it did initiate a review of the delivery of university-level education in Northeastern Ontario. Council appointed Professor A. N. Bourns as a consultant to examine university education in the region. Professor Bourns met with representatives of the institutions involved and has made several recommendations to them and to Council. At its 1982 Spring hearings Council will review these findings and recommendations with the institutions concerned.

For 1982-83, the value of the Northern Ontario grants to Lakehead and Laurentian universities and Laurentian's affiliated colleges is calculated according to the "mini-formula" outlined in Advisory Memorandum 75-VII. On the basis of this formula, each grant is determined with reference to the prior year's Basic Operating Income of each institution. Accordingly, Council *recommends to the Minister:*

OCUA 81-16
NORTHERN ONTARIO GRANTS 1982-83

THAT Northern Ontario grants in 1982-83 be made in the following amounts:

Lakehead	$1,805,000
Laurentian	1,748,000
Algoma	177,000
Laurentian (Algoma)	10,000
Nipissing	274,000
Laurentian (Nipissing)	14,000
Hearst	102,000

Bilingualism Grants

In Advisory Memorandum 80-VI it was noted that the full incremental costs of bilingualism programs, as documented in Advisory Memorandum 77-IV, had not been met by Government grants. Advisory Memorandum 81-II again recommended that the remaining shortfall in grants be funded by Government. Government did not meet this request.

For 1982-83, therefore, the total funds available for distribution by Council are equal to the total of the previous year's grants increased by the percentage increase in total university operating grants (12.2%). Council is again recommending that total available bilingualism grants be allocated according to the incidence of incremental bilingualism costs, as identified by Council's 1976-77 cost study documented in Advisory Memorandum 77-VI.

In Advisory Memorandum 77-VI, Council indicated that in 4 to 6 years bilingualism costs would again be reviewed to determine the appropriate level and distribution of grants for a subsequent period of similar length. Council expects to conduct such a review in the up-coming year using 1981-82 cost data. Accordingly, Council *recommends to the Minister:*

OCUA 81-17
BILINGUALISM GRANTS 1982-83

THAT bilingualism grants in 1982-83 be made in the following amounts:

Ottawa	$6,155,000
Laurentian	1,521,000
Glendon	194,000
Hearst	76,000
Sudbury	28,000
St. Paul	296,000

Supplementary Grants

For a number of years, Council has followed a policy of reducing annually the value of supplementary grants. In 1981-82, Lakehead University was the only institution to be awarded a supplementary grant and received $150,000. For 1982-83, Council continues to adhere to its policy of reducing the value of supplementary grants and recommends that the supplementary grant to Lakehead University be eliminated.

However, consistent with the position taken by Council when Brock University and Laurentian University were removed from the list of institutions eligible to receive supplementary grants, Council proposes that a terminal grant of $100,000 be provided to Lakehead University for the year 1982-83. Accordingly, Council *recommends to the Minister:*

> *OCUA 81-18*
> *TERMINAL SUPPLEMENTARY GRANT TO LAKEHEAD UNIVERSITY 1982-83*
>
> *THAT* a terminal supplementary grant of $100,000 be made to Lakehead University in 1982-83.

Bar Admission Course

It has been Council's practice in recent years to recommend that the grant-in-aid for the Bar Admission Course be increased by the same percentage as that accorded the university system as a whole. Council continues to apply this policy and proposes that the grant-in-aid for the Bar Admission Course for 1982-83 be increased by 12.2% over the $568,000 allocated in 1981-82. Council accordingly *recommends to the Minister:*

> *OCUA 81-19*
> *GRANT TO THE LAW SOCIETY OF UPPER CANADA ON BEHALF OF THE BAR ADMISSION COURSE 1982-83*
>
> *THAT* a grant of $637,000 be made to The Law Society of Upper Canada for support of the Bar Admission Course in 1982-83.

Basic Income Unit Values

Of the $1,029.792 million available for distribution in 1982-83, Council has recommended that $14.537 million be made available for Northern Ontario, bilingualism, supplementary and differentiation grants, and for the grant-in-aid for the Bar Admission Course.

In addition to these deductions, shown in Table I, $1.205 million has been set aside by Council as the provision for final enrolment adjustment. This amount is intended to offset any discrepancy between the estimated weighted enrolment for 1981-82 and the final enrolment figures. The amount remaining for distribution by formula grants after deductions for non-formula grants and enrolment adjustment is $1,014.050 million. It should be noted that the unused portion of the provision for final enrolment adjustment will also be distributed according to the funding formula.

TABLE I

Availability of Funds for Distribution as Graduate and Undergraduate Formula Grants for 1982-83

Available for Council's Allocative Recommendation		$1,029,792,000
Deduct:		
Northern Ontario Grants	$ 4,130,000	
Bilingualism Grants	8,270,000	
Supplementary Grants	100,000	
Differentiation Grants	1,400,000	
Bar Admission Course	637,000	
Sub-Total	$14,537,000	
Provision for Final Enrolment Adjustment	1,205,000	
Total Deductions		15,742,000
Available for distribution as Graduate and Undergraduate Formula Grants		$1,014,050,000

Calculated on an amount of $1,014.050 million available for distribution by formula grants, the value of the undergraduate Basic Income Unit (BIU) is $3,666 and the graduate BIU is $3,573. The undergraduate allocation is calculated in accordance with the undergraduate funding formula established in Advisory Memorandum 76-VII. The graduate BIU allocation is calculated according to the method specified in Advisory Memorandum 78-III. Council accordingly *recommends to the Minister:*

> *OCUA 81-20*
> *GRADUATE AND UNDERGRADUATE BIU VALUES FOR 1982-83*
>
> *THAT* for 1982-83, the graduate BIU value be not less than $3,573 and the under-graduate BIU value be not less than $3,666.

Tables II and III summarize the distribution of grants and Basic Operating Income based on the recommendations contained in this memorandum. Table II documents, by institution, the formula and non-formula grants recommended by Council for 1982-83, along with the grants' total for 1981-82 and the percentage increases in grants between the two years.

Table III outlines the Basic Operating Income and non-formula grants of each institution for 1982-83 and the corresponding sum of these figures for 1981-82. Council notes that, while Basic Operating Income is a more accurate measure of expected revenue for the university system than the grants alone, the fee portion of Basic Operating Income may differ from actual revenue collected by the system. An explanation of the basis for this difference and its implications is found in the Appendix to Advisory Memorandum 78-V.

W. C. Winegard
Chairman
February 26, 1982

Distribution of Grants Generated by Recommendations in Advisory Memorandum 81-IX
($ Thousands)

	1982-83 Recommendations							
	Formula Grants	Northern Ontario Grants	Bilingualism Grants	Differentiation Grant	Supplementary Grant, Special Grant & Final Enrolment Adjustment	Total Grants Recommended	1981-82 Total Grants	% Change
Brock	17,232					17,232	14,869	15.9
Carleton	50,631					50,631	45,993	10.1
Guelph	61,546					61,546	55,614	10.7
Lakehead	15,228	1,805			100	17,133	15,415	11.1
Laurentian	14,377	1,748	1,549			17,674	15,852	11.5
Algoma	1,140	177				1,317	1,269	3.8
Laurentian (Algoma)	135	10				145	69	110.1
Nipissing	2,305	274				2,579	2,092	23.3
Laurentian (Nipissing)	178	14				192	98	95.9
Hearst	298	102	76			476	467	1.9
Laurentian (Hearst)	24					24	0	NA
McMaster	67,518					67,518	60,944	10.8
Ottawa	79,221		6,451			85,672	77,039	11.2
Queen's	70,693					70,693	63,286	11.7
Toronto	230,016					230,016	205,837	11.7
Trent	9,827			1,400		11,227	10,255	9.5
Waterloo	78,409					78,409	70,253	11.6
Western	104,962					104,962	92,848	13.0
Wilfrid Laurier	19,712					19,712	17,155	14.9
Windsor	43,455					43,455	38,837	11.9
York	80,484		194			80,678	70,257	14.8
OISE	14,638					14,638	13,342	9.7
Ryerson	45,504					45,504	40,765	11.6
OCA	6,416					6,416	5,681	12.9
Dominican	101					101	91	11.0
TOTAL	1,014,050	4,130	8,270	1,400	100	1,027,950	918,328	11.9
Bar Admission					637			
Final Enrolment Adjustment					1,205			

Notes: 1. Dominican College receives 50% funding. The theology schools receiving 100% funding are included with the parent institution.
2. 1982-83 formula grants are calculated using an undergraduate BIU value of $3,866, a graduate BIU value of $3,573 and formula fee rates increased by 12.2% over their 1981-82 levels.
3. Bilingualism grants for affiliated institutions are included with the parent institutions
4. 1981-82 grants were calculated using an undergraduate BIU of $3,316 and a graduate BIU value of $3,232.
5. The 1981-82 grant total for Ryerson includes the $300,000 awarded as a result of Advisory Memorandum 81-VI.

TABLE III

Distribution of Basic Operating Income and Grant Recommendations in Advisory Memorandum 81-IX
($ Thousands)

	1982-83 Recommendations						1981-82 BOI plus Northern, Bilingualism, Supplementary & Special Grants	% Change
	Basic Operating Income (BOI)	Northern Ontario Grants	Bilingualism Grants	Differentiation Grants	Supplementary Grant, Special Grant & Final Enrolment Adjustment	BOI Plus Northern, Bilingualism, Differentiation, Supplementary & Special Grants		
Brock	20,811					20,811	17,931	16.1
Carleton	61,571					61,571	55,735	10.5
Guelph	71,624					71,624	64,515	11.0
Lakehead	18,432	1,805			100	20,337	18,231	11.6
Laurentian	17,803	1,748	1,549			21,100	18,891	11.7
Algoma	1,541	177				1,718	1,649	4.2
Laurentian (Algoma)	162	10				172	84	104.8
Nipissing	2,838	274				3,112	2,536	22.7
Laurentian (Nipissing)	215	14				229	118	94.1
Hearst	403	102	76			581	571	1.8
Laurentian (Hearst)	27					27	0	NA
McMaster	78,982					78,982	71,109	11.1
Ottawa	93,620		6,451			100,071	89,737	11.5
Queen's	82,556					82,556	73,714	12.0
Toronto	266,418					266,418	237,770	12.0
Trent	12,369			1,400		13,769	12,507	10.1
Waterloo	93,524					93,524	83,520	12.0
Western	124,424					124,424	109,781	13.3
Wilfrid Laurier	24,361					24,361	21,228	14.8
Windsor	52,380					52,380	46,701	12.2
York	97,598		194			97,792	85,117	14.9
OISE	16,101					16,101	14,661	9.8
Ryerson	52,888					52,888	47,270	11.9
OCA	7,662					7,662	6,766	13.2
Dominican[1]	133					133	120	10.8
TOTAL	1,198,443	4,130	8,270	1,400	100	1,212,343	1,080,262	12.2
Bar Admission					637			
Final Enrolment Adjustment					1,205			

Notes:
1. Dominican College receives 50% funding. The theology schools receiving 100% funding are included with the parent institution.
2. 1982-83 BOI is calculated using an undergraduate BIU value of $3,666 and a graduate BIU value of $3,573.
3. Bilingualism grants for affiliated institutions are included with the parent institution.
4. 1981-82 BOI is calculated using an undergraduate BIU value of $3,316 and a graduate BIU value of $3,232.
5. The 1981-82 BOI total for Ryerson includes the $300,000 awarded as a result of Advisory Memorandum 81-VI.

OCUA Public Meetings, 1981-82

OCUA Public Meetings 1981-82

In view of the expected activities of the Committee on the Future Role of Universities in Ontario, the Ontario Council on University Affairs cancelled its 1981 Spring Hearings, except for meetings with Laurentian University, the Laurentian affiliates, and the Council of Ontario Universities.

Date	Institution or Organization and Place of Meeting
April 10, 1981	Council of Ontario Universities (Queen's Park)
May 1, 1981	Laurentian University, Algoma University College, Le Collège Universitaire de Hearst, Nipissing University College (Algoma University College)

OCUA Recommendations and Government Responses, 1981-82

OCUA Recommendations and Government Responses, 1981-82

Recommendations Number	Title	Response
Advisory Memorandum 81-I		
81-1	Ontario Graduate Scholarship Stipends 1982-83	Not Accepted
81-2	Institutional Awards to Universities without Doctoral Programs	Accepted
81-3	Ontario Graduate Scholarships to Recent Landed Immigrants and Persons on Student Visas	Accepted
81-4	Number of Ontario Graduate Scholarship Awards in 1982-83	Accepted
Advisory Memorandum 81-II		
81-5	Government Operating Grants for 1982-83 to meet the Cost of Council's Basic Objectives in Funding the Operation of Provincially-assisted Universities and their Affiliated Colleges, Ryerson Polytechnical Institute, the Ontario Institute for Studies in Education, the Ontario College of Art and Dominican College	Not Accepted
81-6	Formula Fee rates for 1982-3 to meet the Cost of Council's Basic Objectives	Not Accepted
81-7	Funding for 1982-83 for existing Bilingualism Programs and the Bar Admission Course	Not Accepted
81-8	Equipment and Library Funding for 1982-83	Not Accepted
81-9	Level of Support for Major Repairs, Renovations and Replacement Projects in 1982-83	Not Accepted
Advisory Memorandum 81-III		
Advisory Memorandum 81-IV		
81-10	Funding for the Undergraduate Program in Geological Engineering at the University of Waterloo	Accepted
Advisory Memorandum 81-V		
Advisory Memorandum 81-VI		
81-11	Institutional Formula Weight for Ryerson Polytechnical Institute's Formula Funding Base	Accepted
81-12	Institutional Formula Weight for Ryerson Polytechnical Institute's Three-Year Moving Average	Accepted
81-13	Additional Funds required for the University System in 1981-82 in Recognition of the Institutional Weight Changes for Ryerson Polytechnical Institute	Accepted
Advisory Memorandum 81-VII		

Advisory Memorandum 81-VIII		
81-14	Grant to Purchase Books for a University Level Library to be Located in Orillia	Accepted
Advisory Memorandum 81-IX		
81-15	Differentiation Grant for Trent University 1982-83	Accepted
81-16	Northern Ontario Grants 1982-83	Accepted
81-17	Bilingualism Grants 1982-83	Accepted
81-18	Terminal Supplementary Grant to Lakehead University 1982-83	Accepted
81-19	Grant to the Law Society of Upper Canada on behalf of the Bar Admission Course 1982-83	Accepted
81-20	Graduate and Undergraduate BIU Values for 1982-83	Accepted